Essays in Corporate Governance

by

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Abstract

This thesis is composed of three chapters. In the first chapter, I analyze the effect of change in product market competition on board composition and evaluate its consequences on firm performance. Using industry-specific exogenous changes in product market competition, I test whether firms respond to changes in the demand for board independence. I find that firms decrease their level of board independence by 5.52 percentage points in response to an increase in product market competition. Moreover, by exploiting the 2003 NYSE and NASDAQ rulings in a triple-difference design, I show that constraint on firm's ability to adjust its board structure in response to changes in competition has negative consequences on its performance; firms which are constrained by the regulation to reduce their board independence experience a 10.5 percentage points lower return on assets (ROA) compared to unconstrained firms. This suggests that the decrease in board independence is in the interest of shareholders. By showing that regulation may actually harm some firms, the analysis sheds light on the costs of "one size fits all" governance regulations.

In the second chapter, I shed light on the political ideology of the CEO as an important determinant of firm performance. Using individual campaign contribution data, I measure the political ideology of U.S. CEOs over the period 1994 to 2014 and analyze the relation between CEO ideology and firm performance. To identify the causal effect of CEO ideology, I use a combination of time-varying effects and novel instruments based on the ideology of the pool of potential CEO hires. Across all specifications, I find that firms with Republican CEOs, on average, 6 percentage point higher ROA compared to firms with Democrat CEOs. Several alternate explanations such as time varying differences at state-industry level, political connections and firm fixed effects do not explain away the results.

In the third chapter, joint work with Antonio Vazquez Lopez (UC3M), we test whether focal firms whose CEOs sit on multiple boards can suffer decreases in performance due to transient attention-grabbing events in firms where CEOs sit as independent directors. We exploit extreme returns (positive and negative), extreme earnings and extreme volatility in firms where CEOs sit as independent directors and find that such distraction leads to an average decrease of approximately 1% of focal firm's ROA, Q, market returns and ROE. This effect is stronger for focal firms that are geographically more distant to firms where CEOs sit as independent directors, which suggests that distraction is costlier in such situations. Additionally, we show that distraction is greater for CEOs that sit on the audit committee or chair a major sub-committee. Finally, we show that these distraction events also lead to lower CEO compensation and higher probability of forced turnover.

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Abstract

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1 Introduction

Board of directors is one of the most salient internal governance mechanisms employed by firms. However, answers to some of the first order questions on board of directors in the corporate governance literature remain contested, even after decades of research on them. Does board independence matter for firm performance?[2] Are board structures reflective of shareholder interests[3] or are they a result of CEO entrenchment?[4] Is regulating board composition value enhancing?[5] Even in the absence of consensus on the answers to these questions, since the early 2000s, activist institutional investors and regulators have pressed for greater board independence, under the assumption that independent directors are better monitors of managers. If firms choose their board structures to maximize firm value or if greater board independence is not always beneficial, such "one size fits all" regulations may have negative consequences.

In this paper, I contribute to these open debates by addressing two novel research questions. Do firms adjust their board independence in response to a change in product market competition? If so, is this adjustment in the interest of shareholders?

Product market competition arguably serves as a significant governance mechanism in disciplining managers.[6] Several empirical studies highlight this substitution between product market competition and corporate governance.[7] If competition serves as a monitoring mechanism, then an increase in competition would reduce the benefits of monitoring accrued to a firm using internal governance structures. Hence, firms may reduce their board independence in response to an increase in competition. By making use of an exogenous change in product market competition which alters the competitive landscape of the firm, I find that when firms are allowed to adjust their board structure, firms reduce their board independence in response to an increase in competition.

However, is this reduction in board independence in the interest of shareholders? If the governance structures are captured by managers, this decrease in board independence might not be reflective of reduced monitoring needs, but rather the result of managers opting for lower monitoring to indulge in unethical behavior or to enjoy quiet life.[8] To

[2]There seems to be a lack of consistency in the empirical findings for the effect of board independence on firm value. Some studies have found positive associations (Rosenstein and Wyatt, 1990; Krivogorsky, 2006; Hossain et al., 2001; Black et al., 2006) while some found negative or non significant effect (Hermalin and Weisbach, 1991; Agrawal and Knoeber, 1996; Klein, 1998; Dalton et al., 1998; Bhagat and Black, 2001; Adjaoud et al., 2007; Pham et al., 2011; Wintoki et al., 2012).

[3]See, for instance, Demsetz and Lehn (1985); Hermalin and Weisbach (1998); Raheja (2005); Harris and Raviv (2008).

[4]See, for instance, Bebchuk and Cohen (2005); Bebchuk et al. (2008).

[5]While some studies find an overall positive effect of governance regulations on firm value (Chhaochharia and Grinstein, 2007), others debate their efficacy (Romano, 2004; Coles et al., 2008; Duchin et al., 2010; Ahern and Dittmar, 2012).

[6]See, for instance,Alchian (1950); Stigler (1958); Fama (1980); Hart (1983).

[7]See, for instance, Giroud and Mueller (2010, 2011); Chhaochharia et al. (2016).

[8]Shleifer (2004) highlights the dark side of competition where due to increased competition, managers may feel the

test whether this decrease in board independence is indeed in the interest of shareholders, I analyze a setting in which some firms are constrained in their ability to reduce their board independence in response to a change in competition. If this reduction in board independence is due to decreased monitoring needs by the firm, then a restriction in the ability of the firms to determine the level of monitoring given their environmental setting may reflect negatively in firm profitability. I find that constrained firms fare worse in terms of firms performance than unconstrained firms when faced with an adverse shock to competition.

To analyze the effect of product market competition on board independence, I exploit a quasi-natural experiment in the form of large tariff reductions as an exogenous increase in the product market competition. I utilize import tariff reduction from 1980-2015 in the U.S. manufacturing sector. To estimate the effect of increased competition on board independence, I use a difference-in-difference approach with the firm, year and 2-digit SIC-year fixed effects. Thus, for identification, I compare changes in board independence of firms belonging to the industry that received tariff reduction (treated firms) to the changes in board independence of the firms that did not receive tariff reduction (control firms) in the same 2-digit SIC. I find that firms react to competition by decreasing board independence. In particular, a large tariff reduction event leads to a 2.9 percentage points decrease in the board independence in firms affected by the event relative to unaffected firms in the same 2-digit SIC.

This effect is much stronger when I limit the analysis to the years prior to 2002. In response to corporate scandals and other corporate governance failures, various regulations were passed in the early 2000s which were aimed at increasing board independence. Hence, they effectively set up a lower bound that may limit the reduction in board independence of the firms in response to increased competition. To abstract from these confounding effects, I carry out the analysis for the relevant sample i.e. for the years prior to 2002 and obtain a stronger negative effect of 5.52 percentage points decrease in board independence for this sample period. This effect reflects a 12% decrease in board independence for a firm with average board independence.

A decrease in the proportion of board independence could be due to simply firing (not re-electing) the independent directors or hiring of non-independent directors or due to replacing the independent directors with non-independent directors. I analyze the change in board composition to show that the decrease in board independence is partly due to a decrease in the number of independent directors and partly due to an increase in the

pressure to enhance short term performance. For instance, they may manipulate the earnings to influence the stock prices Datta et al. (2013) or indulge in tax evasion (Cai and Liu, 2009).

non-independent i.e. employee and linked directors. These results are consistent with the notion that in light of a significant increase in product market competition, complex and strategic decisions need to be made on how to respond to the new competitive environment. Hence, increase in competition may not only render the monitoring role of the directors less relevant but may also enhance the need of an insider in the board for their superior advising capabilities.[9] These results support the view that firms trade off the strengths and weaknesses of inside and outside directors in advising and monitoring to maximize shareholder value.

Furthermore, I show that firms' reaction to competition depends on the level of exposure to competition. Stand-alone firms which operate in a single product market (focused firms) may be exposed to intensified pressure from foreign competitors much more than highly diversified firms which operate in numerous product markets. Similarly, firms that sell a significant fraction of their production abroad (exporting firms) may be less affected by the increased pressure from foreign rivals. I find that the effect is mainly driven by focused and non-exporting firms.

To explicitly test whether this reduction in board independence is in the interest of shareholders or not, I utilize the listing requirements by the NYSE and NASDAQ approved by the SEC in November 2003, which required the majority of the board to be composed of independent directors. In conjunction with the exogenous shock to competition, these requirements pose constraints on some firms, but not all, in reducing board independence.[10] If firms were structuring the boards in the interest of shareholders, constrained firms would end up with a suboptimal board and hence lower firm performance.

I analyze how a change in competition affects constrained firms differently from unconstrained firms. I define my group of "constrained" firms as firms with lower than 55% board independence at the time they received a tariff reduction.[11] Since firms were constrained only after the law was passed (i.e., 2003), I carry out the diff-in-diff analysis for years 2003 onwards. I find that ROA of constrained firms decreases by 0.065 pp (statistically significant at 1%) compared to unconstrained firms after the passage of the law. This effect is economically significant as it corresponds to more than one-third standard deviations

[9] See, for instance, Baysinger et al. (1991); Hermalin and Weisbach (1991); Bhagat and Black (2001); Coles et al. (2008); Faleye et al. (2011).

[10] For example, consider two firms listed in NYSE; one with 55% of its board as independent while another having board independence of 85%. Both firms are in compliance with the regulations imposed by the exchange. Now suppose there is a significant tariff reduction increasing the product market competition for both firms. Results from the first part show that firms would want to decrease board independence in response to this change. However, one of the firms (with 55% board independence) is constrained compared to the other (with 85%) in its ability to reduce independence due to the listing requirements by NYSE and NASDAQ.

[11] The results are robust to alternative definitions of constrained, i.e., using both stricter (50%) as well as lenient (60%) thresholds of board independence.

decrease in ROA.

However, being "constrained" is dependent on firm's board independence level at a specific point in time. While I show that the two groups (constrained and unconstrained) do not differ systematically in observables, it can be argued that board independence is being endogenously determined by the firms. Therefore, we may be concerned that the very fact that these groups have different levels of board independence indicates that these two groups are systematically different from each other. However, what is pertinent for identification is that the two groups do not differ in their response to competition, i.e. the change in competition affects constrained and unconstrained[12] firms in the same way even in the absence of law. Triple differences (DiDiD) analysis allows me to address this potential concern.

DiDiD not only allows me to capture the effect of this inability to freely reduce board independence on firm performance but also allows for the effect of competition on the profitability of these two distinct groups in the absence of being constrained to be different.[13] The results show that change in competition affects firm profitability of constrained firms significantly negatively compared to unconstrained firms post law. In particular, being constrained results in 10.5 percentage points lower return on assets (ROA) compared to unconstrained firms which correspond to a quarter of a standard deviations decrease in ROA for a firm with average ROA.

I provide numerous tests in support of the validity of results. Specifically for the first analysis, I assess the evolution of board independence before and after the tariff reduction event to show evidence in favor of parallel trends assumption underlying the difference-in-differences approach. In addition, I show that the treatment and control firms do not systematically differ along any important dimension, I show that the firms that got tariff reduction were very similar in levels as well as trends in firm characteristics, including board independence, prior to the tariff reduction. I further show that the average board independence of the industry does not predict tariff reduction events. I also provide evidence that other average firm or board characteristics at industry level do not predict tariff reductions either. I also provide numerous tests in support of the validity of the DiDiD. First, I show that the constrained and unconstrained firms do not systematically differ along important observables. Second, I show that the evolution of board independence for constrained and unconstrained firms was similar prior to the law. Lastly, I provide evidence

[12] note that firms were not really constrained before the law. The terms constrained and unconstrained here are being used to refer to firms with a certain level of board independence at the time they receive tariff reduction, i.e. below and above 55% respectively.

[13] The three dimensions of treatment are; pre- and post-tariff reduction, pre- and post-law and constrained versus unconstrained.

in favor of parallel trends assumption by showing that the constrained and unconstrained firm did not differ in their firm performance prior to the law.

Results are robust to alternative thresholds to define tariff reduction and exclusion of any specific industry or year. To ensure that tariff reduction events are not systematically correlated with some unobserved firm characteristics, I carry out placebo regressions where I randomly assign significant tariff reduction (treatment) to the industries. I find no effect of competition, reassuring that the results do not reflect systematic differences among the firms in the sample. Results are also robust to alternate thresholds to define "constrained", using varying sample periods and using Tobin's Q as a measure of firm performance.

Through these set of analyses, I contribute to the ever growing literature on the importance of board independence for firm outcomes. The findings suggest that board independence matters. Not only do firms alter their board structure in response to an exogenous shock, the constraint on the ability to do so has negative implication for firm performance.

This paper also contributes to the research that purports that product market competition is a substitute for corporate governance. Earlier studies that have examined the relation between product market competition and corporate governance have either used endogenously determined measures of governance or competition[14] or have analyzed the effect of governance on firm performance, moderated by a given level of competition[15] to imply the substitution between competition and governance. By directly analyzing the effect of an exogenous increase in competition in decreasing board independence, the paper provides causal evidence that competition and board monitoring are substitutes.

Furthermore, this paper contributes to the stream that analyzes organizational responses to a change in product market competition. For instance, technology upgrade (Bustos, 2011), structure of compensation and incentives of executives Cuñat and Guadalupe (2009), organizational design (Guadalupe and Wulf, 2010), cost of debt (Valta, 2012), investment (Frésard and Valta, 2015), corporate social responsibility (Flammer, 2015)and CEO turnover and performance sensitivity (Dasgupta et al., 2017). In this paper, I examine a previously unexplored organizational response to a change in the competitive environment of a firm, namely change in board independence.

Moreover, I contribute to the debate on the optimal versus entrenched boards. While some researchers argue that board structure arises as an optimal outcome to the given

[14]See, for instance, Cremers et al. (2008); Chou et al. (2011). These studies analyze the relation between competition and external governance structures, specifically, market for corporate control, using Herfindahl Index (HHI) for industry competition as a measure of industry competition.

[15]See, for instance, Giroud and Mueller (2010, 2011); Chhaochharia et al. (2016).

environment of a firm (Hermalin and Weisbach, 1998; Raheja, 2005), another strand of literature supports the entrenchment view according to which the boards may be captured by the managers who seek to indulge in rent seeking behavior (Gompers et al., 2003; Chhaochharia and Grinstein, 2007). I present evidence in favor of the former view by showing that changes in board composition caused by an exogenous increase in competition increase shareholder value, in the sense that profits fall less for firms that lower board independence than for those who cannot do so.

Finally, I contribute to the research on the costs of corporate governance regulation (Coles et al., 2008; Duchin et al., 2010)[16] by explicitly showing that constrained firms fare worse than unconstrained firms when faced with an adverse shock to the competition. I utilize a triple diff design to alleviate the potential endogeneity concerns not addressed in this literature earlier. By highlighting that greater board independence may actually harm some firms, I emphasize the negative consequences of regulations with one-size-fits-all approach.

2 Product Market Competition and Board Independence

Board of directors is one of the most critical apparatus for corporate governance. Their essential duty is to ensure that the shareholders best interests are met. Having independent directors in the boards is considered a corporate governance "best practice", at least since the widespread corporate scandals in the early 2000s. Institutional investors such as TIAA-CREF only invest in firms with majority independent boards, and CalPERS advocate that the only insider on the board should be the CEO Bhagat and Black (2001); Coles et al. (2008). Moreover, the priority of reformers to increase board independence is also reflected in regulations such as Sarbanes-Oxley Act of 2002 and rules implemented by Securities and Exchange Commission (SEC), National Association of Securities Dealers (NASD) and New York Stock Exchange (NYSE) which have called for majority of the board to be composed of independent agents.

These regulations stem from the assumption that independent directors are better monitors.[17]

[16] Coles et al. (2008), for instance, document that 'complex' firms with greater advising requirement benefit more from larger boards with outsider directors. However, firms in need of greater firm-specific knowledge of the directors would benefit more from insider directors. Duchin et al. (2010) assert that the cost of information is an important factor determining whether increased board independence as a result of these regulations would be beneficial for the firm or not. When the cost of acquiring information is low, the addition of outsiders to the board increased firm performance while when the cost is high, the addition of outsiders to the board worsens the performance.

[17] This notion that independent boards are more effective is mainly grounded in agency theory where the separation

However, this increased independence is by no means a costless panacea. While independent directors may lead to improvements in oversight, these improvements may come at a cost to the advising function of the board.[18] Boards require firm specific knowledge along with sufficient experience and expertise to fulfill this advisory role. Several studies have recognized that insider directors are more aware of the functioning of the firm and have more inside knowledge lending them the superiority of the amount and quality of information over an outsider.[19] Hence, these two roles are subject to a tradeoff. Faleye et al. (2011), for instance, highlight how the improvement in monitoring quality comes at the significant cost of weaker strategic advising and greater managerial myopia. For firms with intense board monitoring, they document significant negative effects on firms' acquisition performance and corporate innovation. They further emphasize that the costs of intense monitoring through lower quality advising outweigh the benefits of better quality monitoring with respect to overall firm value. Other studies have also highlighted how increased board independence might have costs for certain subsample of firms (Coles et al., 2008; Duchin et al., 2010).

In light of these costs of increased independence, firms with lower monitoring needs or higher advising requirements may be better off with boards with a smaller proportion of independent directors. I analyze a setting in which the monitoring needs of the firms receive an exogenous shock. In response to decreased monitoring needs, firms would then adjust their board, reducing their independence level.

Product market competition is viewed as a significant governance mechanism in disciplining managers (Alchian, 1950; Stigler, 1958; Fama, 1980; Hart, 1983). A common argument supporting this view is that of 'natural selection' proposed by Alchian (1950) as inefficient firms would not be able to survive in the face of increased competition. If managers continue to engage in wasteful behavior, the firm would be incapable to compete and would have to declare bankruptcy eventually. Hence, the threat of liquidation and bankruptcy induces managers to exert greater effort (Allen et al., 1999). Moreover, greater competition results in increased information availability for monitoring the managers (Hart, 1983).

Several empirical studies also highlight the substitution between product market competition and corporate governance of firm by analyzing the effect of governance on firm performance, moderated by a given level of competition (Giroud and Mueller, 2010, 2011; Chhaochharia et al., 2016). These studies show how good governance is beneficial for firm

of management and ownership leads managers to take actions not completely aligned with the goals of the shareholders (Jensen and Meckling, 1976). Board of directors, as a monitoring mechanism, would then fail to serve its purpose if it is comprised of the members of the management that it is supposed to control (inside director).

[18] Board of directors have two main functions; monitoring and advising the senior management. See, for instance, (Fama and Jensen, 1983; Hillman and Dalziel, 2003; Harris and Raviv, 2008; Armstrong et al., 2010; Lu et al., 2017)

[19] see, for instance, (Baysinger et al., 1991; Hermalin and Weisbach, 1991; Bhagat and Black, 2001).

performance, but only for firms in non-competitive industries.

Not many studies have analyzed the direct effect of competition on governance structures. Few exceptions include Cremers et al. (2008)[20] and Chou et al. (2011)[21] who analyze the relation between competition and external governance structures, specifically, market for corporate control.

I contribute to this literature by analyzing the effect of competition on one of the most important internal governance mechanism, board independence. If indeed competition serves as a monitoring mechanism, then an increase in competition would reduce the benefits of monitoring accrued to a firm using internal governance structures. Hence, we would expect firms to reduce their internal monitoring through decreased board independence in response to an increase in competition.

2.1 Data and Sample

To understand how competition affects board independence, the main challenge is to find a measure of competition at the industry level that is exogenous to corporate policies. To account for potential endogeneity of product market competition, I use a quasi-natural experimental setting that produces exogenous increases in competition in some industries but not in others. Specifically, I exploit reductions in import tariffs to identify the effect of variations in competition on the firm's board independence.[22]

Import tariffs represent a significant amount of trade costs. Hence, over the past few decades, U.S. trade authorities have gradually removed this important barrier to trade. In the U.S. manufacturing sector, the average tariff has seen a reduction of about 75% in thirty years (Frésard and Valta, 2015). This reduction in import tariffs facilitates the entry of foreign rivals to domestic U.S. markets, thus increasing the product market competition.[23]

I gather industry-level imports data compiled by Feenstra (1996); Feenstra et al. (2002); Schott (2010). This data is available for manufacturing firms for the years 1972-2005. To

[20]The authors highlight that competition is associated with higher takeover defenses suggesting that competition and market for corporate controls can be substitutes.

[21]Using Herfindahl Index (HHI) for industry competition and G-Index for governance, they document that firms in competitive industries have poor corporate governance.

[22]Recently, several studies have used tariff reduction as an exogenous change in product market competition(Trefler, 2004; Fresard, 2010; Guadalupe and Wulf, 2010; Valta, 2012; Flammer, 2015; Frésard and Valta, 2015; Dasgupta et al., 2017).

[23]Reduction of trade barriers gives rise to a significant increase in competition from foreign rivals (Balassa, 1966; Edwards, 1993).

be able to extend the analysis to most recent years, I extend tariff reduction data until 2015 using the data on imports provided by Peter Schott on his website.[24]

Any product imported into the U.S. is categorized through a 10-digit HS (Harmonized System) code. Feenstra (1996) and Schott (2009) have developed concordance tables that allow the mapping of each HS product code onto four-digit SIC codes. Using this, for each industry-year, I compute the ad valorem tariff rate as the duties collected at U.S. Customs divided by the Free-On-Board custom value of imports. To ensure that I capture significant events, I only consider large tariff reductions. Specifically, following Valta (2012) and Frésard and Valta (2015), I compute the average tariff change for each industry and characterize tariff reductions in a given industry as the deviations in the yearly change in tariff rates from the same industry's average (absolute) change. Tariffs fluctuate very often and a usual tariff change from one year to another can be very small. To ensure that I capture significant events which would actually affect the competitive landscape of the firms in that industry, I consider tariff reductions only when the tariff reduction in an industry year is three times larger than the average (absolute) change in the same industry across years and only when the tariff rate is at least 1% or higher. The results remain robust even after employing thresholds of two and four times larger than the industry average tariff change. Moreover, similar to Frésard and Valta (2015), I exclude tariff cuts when they are followed by equivalently large increases in tariff rates over three subsequent years. This is to ensure that we are not capturing transitory changes.

The variable of interest is board independence calculated as the proportion of independent directors on the board. Therefore, I merge tariff data with the data on boards from Institutional Shareholder Services (formerly Risk Metrics) for the years 1980-2015[25]. For industries with multiple events,[26] I use the first large event as the shock to the competition. Figure 1 shows the distribution of tariff reduction events from 1980-2015. The figure shows that tariff reductions occur throughout the sample period. This alleviates the concern that the identification may be driven by a time-specific event concentrated in a given year. We observe a large peak in 1995. This corresponds to the adoption of North American Free Trade Agreement (NAFTA) in 1994 which resulted in a trilateral trade block between the U.S., Canada, and Mexico.

After merging, I have a total of 120 unique 4-digit SIC with 1475 firms in the sample. There are 76 events corresponding to 55 distinct four-digit industries in 346 firms during

[24] http://faculty.som.yale.edu/peterschott/sub international.htm

[25] In ISS, the data on board composition is only available for years 1996 onwards. To avoid losing more than half of the events, I collect information on board independence using the individual profile of the directors from Boardex from 1980-1996.

[26] I have 15 industries with multiple events over these 35 years; 10 industries with 2 events, 4 industries with 3 events and 1 industry with 4 events.

the time period 1981-2015.

Table I shows the descriptive statistics of the tariff, firm and board variables. Panel A shows the descriptive statistics for the 4-digit SIC level tariffs from 1981 to 2015. The average tariff in the manufacturing industries during the period is 2.13%. There is significant variation in the tariff rates among industries, ranging from 0% to 27.6%. The change in tariff during this period is negative and corresponds to an average decrease of 0.11 percentage points per year. 2.2% of 4-digit SICs witnessed a significant tariff reduction. Panel B shows the firm characteristics. The average firm in the sample has a ROA of 2.2%. Panel C shows the board and governance variables. The average board independence during the sample period is 63.6%, and the average board has around 7 members. Variable definitions and data sources are provided in the Appendix.

2.2 Empirical Methodology

I exploit the difference in timing of the events across industries by using a difference-in-difference strategy to estimate the effect of significant tariff reduction on board independence. In particular, I estimate the following:

$$board\ independence_{jikt} = \beta tariff\ reduction_{ikt} + \alpha_j + \alpha_t + \alpha_{it} + X^t_{j\,ikt-1}\Gamma + u_{jikt}, \quad (1)$$

where $board\ independence_{jikt}$ is the proportion of independent directors in the board of firm j which belongs to 2-digit SIC i and 4-digit SIC k in the year t. $tariff\ reduction_{ikt}$ is a binary variable equal to one for all years after t for a 4-digit SIC, k, that got a significant tariff reduction in year t. X_{jikt-1} are one year lagged firm-specific factors such as firm performance, firm size, leverage, cash, investment and R&D that may impact board independence. It also includes one-year lagged board controls such as board size, gender, and ethnic composition and the average age of the board.

α_j controls for firm fixed effects. This term accounts for all time-invariant factors such as the firm location, industry, firm mission statement or long-term vision and policy. Hence, I rely only on within firm variation for my estimation. I include year fixed effects, α_t, to controls for factors which impact all firms similarly in a year. The macroeconomic and business cycle fluctuations which are common to all firms, as well as aggregate governance trends, are accounted for by this term.

Moreover, the trends in board independence in different industries might be evolving at a different rate. In order to account for this, I include 2-digit SIC specific time-varying fixed effects, α_{it}. Hence, the term α_{it} non-parametrically allows for a differential trend

in board independence among firms belonging to different 2-digit SIC. To understand this better, consider two 2-digit industries "20: Food and Kindred Products" and "21: Tobacco Products". While both of these are within the manufacturing sector, these two groups of industries are very different from each other and hence might have very different board structures. For instance, average board independence for "21: Tobacco Products" is 75.3% while it is only 51.5% for "20: Food and Kindred Products". Now, for instance, in our sample, a 4-digit industry "2024: Ice Cream and Frozen Deserts" receives a tariff reduction in 2000 hence making it "treated" while "2121: Cigars" doesn't which makes it "control". Therefore, when we compare this "treated" firms with "control" firms, we may be comparing two groups which differ not only in their treatment but also various other aspects. By including 2-digit SIC specific time-varying fixed effects, I am able to compare firms which at least belong to the same major group and hence are much alike except for their treatment status.

Together, the estimation relies only on within firm variation in board independence within a 2-digit SIC to estimate β. That is, I compare changes in the board independence in a firm in a 4-digit SIC which was affected by a tariff reduction with changes in another firm within the same 2-digit SIC which was not affected by a tariff reduction in that year. The identification assumption for β to estimate the causal impact of tariff reduction on board independence is given by: $E(u_{jikt}|\alpha_j, \alpha_t, \alpha_{it}) = 0$. That is, the unobserved factors that affect board independence are uncorrelated with the tariff reduction conditional on firm fixed effects, year fixed effects and 2-digit time-varying fixed effects.

2.3 Results

Table II presents the estimation of Equation 1. The standard errors are clustered at the 2-digit SIC level to allow for arbitrary correlation among firms within the same 2-digit SIC across years. We see a clear negative and significant impact of tariff reduction event on board independence. Board independence decreases by 3.37 percentage points after the tariff reduction compared to firms that did not face a significant tariff reduction (Column 1). The magnitude is economically significant. The effect corresponds to a 0.14 standard deviations decrease in board independence. In other words, the effect reflects a 5.5% decrease in board independence for a firm with average board independence. The magnitude of the coefficient slightly reduces to 3.1 percentage points once I include firm and board controls, but the effect of the increase in competition remains negatively significant (Column 3).

My sample spans over 1981 to 2015. Hence the result shows the average effect of competition

on board independence over three decades. However, in response to corporate scandals and other corporate governance failures, various regulations were passed in the early 2000s targeted towards the composition of the boards such as SOX in 2002 and rules implemented by exchanges such as NASDAQ and NYSE in 2003. These regulations aimed at increasing board independence and hence may confound the effect I obtain. However, the coefficient, if anything, would be underestimated as these regulations would result in an opposite effect on board independence to the one I hypothesize. In order to abstract from these confounding effects, I carry out the analysis for the relevant sample, i.e. for the years prior to 2002. Results are presented in Table III. I obtain a stronger negative effect of competition on board independence for this sample period. In particular, after controlling for firm and year fixed effects, 2-digit SIC industry specific trends, firm characteristics along with governance factors, I find that firms reduce their board independence by 5.53 percentage points or 0.21 standard deviations in response to an increase in competition.[27] This effect reflects a 12% decrease in board independence for a firm with average board independence.

2.3.1 Board Composition

The results in the previous section show a sugnificant decrease in the proportion of independent directors on the board as a response to increased competition. In this section, I test whether the decrease in the proportion of board independence is due to merely firing the independent directors, or hiring of insider and linked directors or due to replacing the independent directors with the employee or linked directors.[28]

If a firm fires independent directors without replacing them with other directors such as insider or linked directors, we should see a decrease in board size due to the firing of independent directors and no change in the number of insiders and linked directors. Instead, if a firm hires new non-independent directors to the board, we should see an increase in the number of non-independent board members and subsequently the board size. On the other hand, if a firm replaces independent directors with insiders or linked directors, we should see an increase in the number of directors belonging to these two categories. The board size, however, can increase, decrease or remain unchanged depending on the replacement rate between the independent directors.[29] I have this information on the type of director only after 1996. Therefore, this analysis is restricted to the years

[27]Results are robust to clustering the standard errors at firm level, 3-digit and 4-digit SIC level.

[28]IRRC considers any director to be linked who is a "former employee; is a service provider, supplier, customer; is a recipient of charitable funds; is considered an interlocking or designated director; or is a family member of a director or executive".

[29]For instance, a firm can fire two independent directors and hire two insider directors, thus keeping board size unchanged. On the other hand, the firm can also replace the two fired independent directors with one (hence, decreasing board size) or three (increasing board size)).

1997-2002.

Table IV shows the results. Column 1 shows that the number of independent directors decreases after the tariff reduction. Tariff reduction event decreases the number of independent directors on the board by 13.87%. This corresponds to a decrease of 0.65 (-0.1387*.6137*7.664239= -.652) independent directors for an average board. Column 2 and 3 show whether the decrease in the number of independent directors is met by an increase in the other directors. We see that there is a significant increase in the number of both employee and linked directors after the event. Tariff reduction event increases the number of employee directors in the board by 11% and linked directors in the board by 20%. This implies an increase of around 0.20 (0.11*.228*7.66) and 0.25 (0.2027*.157*7.66) for employee and linked directors for an average board, respectively. There is no significant change in overall board size (column 4). These results are consistent with the notion that in light of a significant increase in product market competition, complex and strategic decisions need to be made on how to respond to the new competitive environment. Hence, as argued above, increase in competition may not only render the monitoring role of the directors less relevant but may also enhance the need of an insider on the board for their advising capabilities.

2.3.2 Exposure to Competition

Firms face varying level of exposure to competition depending on various factors. For instance, a stand-alone firm which operates in a single product market may be exposed to intensified pressure from foreign competitors much more than a highly diversified firm which operates in numerous product markets, only one of which belongs to the affected industry. Following Frésard and Valta (2015), using Compustat's Business Segment files, I define a firm as "diversified" ("focused") if it reports operations in more than one (only one) industry (4-digit SIC code) in a given year.

I also distinguish exporting firms from non-exporting ones. Firms that sell a large fraction of their production abroad may be less affected by the increased pressure from foreign rivals or may even be positively affected if the importing country experiences reduction in tariff. Using Compustat's Geographic Segment files, I classify a firm as "exporting" if it realizes positive sales abroad in a given year (Denis et al., 2002).

At the industry level, I use Herfindahl-Hirschman Index (HHI) to distinguish firms already operating in a competitive environment from those operating in a less competitive environment. Higher HHI indicates a high industry concentration (i.e., less competitive

industry).

Table V reports the difference-in-difference estimates. Column 1 shows that board independence decreases after the tariff reduction, but this effect is not statistically significant for diversified firms. Focused firms, on the other hand, reduce their board independence by 0.055 in response to an increase in competition, as shown in column 2. Hence, the effect of competition on board independence is driven by these focused firms. Similarly, we see no significant effect on board independence of exporting firms. However, non-exporting firms decrease their board independence by 0.066 after the event. We also find a strong significant reaction to competition by firms operating in industries with high HHI, i.e. in less competitive industries. Column 5 shows that firms in industries with high HHI reduce their board independence by 0.059 in response to an increase in competition while we see no statistically significant effect of competition for firms operating in industries with low HHI (column 6). The results highlight that exposure to competition determines how firms adjust their board independence.

3 Competition, Regulation and Firm Performance

Board independence has been in the spotlight for the past few years with regulators and institutional investors pushing for more independent directors on the boards. Independent directors are assumed to be more effective monitors and therefore considered synonymous to good governance.

In 2002, the Securities Exchange Commission (SEC) pressured the exchanges to improve their governance listing standards (Chhaochharia et al., 2016). Therefore, in August 2002, NYSE proposed that the majority of the board has to be composed of independent directors followed by a similar proposal by NASDAQ in October 2002. SEC approved these proposals in November 2003 and firms had until 2004 to comply with the regulation. Specifically, they had to comply by either the first annual shareholder meeting of the listed issuer or 31st October 2004, whichever came earlier. .

This law sets a minimum threshold of independence for all firms irrespective of the environment they operate in. However, as analyzed above, firms may find it beneficial to reduce their board independence in response to an increase in external governance via increased competition.

However, is this reduction in board independence indeed reflecting the needs of the firm?

Could the counter-factual have been more beneficial for them, i.e. would they have been better off by not reducing the monitoring in response to competition? One may argue that the managers are the ones who choose the board and hence this decrease in independence is reflective of their preferences to empire build, shirk or enjoy quiet life rather than in the interest of shareholders.

To corroborate that this reduction in board independence is indeed in the interest of shareholders, I analyze a setting in which firms are unable to reduce their board independence in response to a change in competition due to regulatory restrictions. If this reduction is indeed a response to decreased monitoring (and potentially increased advising) needs by the firm, then a restriction in the ability of the firms to determine a level of monitoring given their environmental setting may reflect in firm profitability. In this section. to identify the effect of regulatory restrictions, I use 2003 NYSE and NASDAQ listing requirements which required the majority of the board to be composed of independent directors.

3.1 Identification and Results

For the analysis, I exploit the regulation in conjunction with the quasi-natural experiment of tariff reductions. I am interested in firms which were constrained at the time they received tariff reduction. Firms which had board independence slightly higher than 50% after the law are unable to remove an independent director as a result of the tariff reduction shock because they will fall below the 50% board independence mark once they do so. I define the group of "constrained" firms as firms with lower than 55% board independence at the time they received a tariff reduction. Similarly, "unconstrained" are defined as firms with greater than 55% board independence at the time of tariff reduction. I choose 55% board independence because the results from obtained earlier reveal that, on average, a significant tariff reduction decreases board independence by 12% for an average firm. Hence, firms with 55% board independence just before the tariff reduction shock would fall below the minimum allowed board independence mark if they react optimally to the tariff reduction. I consider other definitions of constrained and unconstrained firms, both stricter (50%) as well as more lenient (60%), and show that the results remain robust.[30]

To identify the effect of the ruling passed by NASDAQ and NYSE (hereafter referred to as "law") in conjunction with the change in competition, I compare changes in firm profitability for firms that are constrained by the law at the time of tariff reduction once the law is implemented with firms which are unconstrained by the law. As none of the firms were constrained before the law, I carry out the analysis for years 2003 and onwards.

[30]Depending on the definition of constrained, the number of observations change. Number of firms with significant tariff reduction and board independence lower than 50%, 55%, 60%, and 65% are 41, 41, 46 and 61 (out of 102 firms) respectively.

I use a difference-in-difference strategy and estimate the following:

$$ROA_{jikt} = \beta_1 post\ \ tariff_{ikt} + \beta_2 constrained_j * post\ \ tariff_{ikt} + X^t_{j\,ikt-1}\Gamma + \alpha_j + \alpha_t + \alpha_{it} + u_{jikt}, \quad (2)$$

Where ROA_{jikt} represents ROA for firm j in the year t operating in 2-digit SIC i and 4-digit SIC k. In the baseline case, I define constrained equal to one if the firm at the time of tariff reduction has board independence equal to 55%. $post\ tariff_{ikt}$ is a binary variable equal to one for all years after t for a 4-digit SIC, k, that got a significant tariff reduction in year t. As before, I include the firm fixed effects and 2-digit SIC specific time-varying fixed effects.

Table VI presents the results. Column1 shows that tariff reduction affects the ROA of constrained firms significantly negatively compared to unconstrained firms. Once firm and board controls are included in the estimation (column3), the magnitude of this effect of being constrained increases to 10.12 percentage points. This effect is economically large as it corresponds to more than one-third (0.36) standard deviations decrease in ROA in response to tariff reduction of constrained firms compared to unconstrained firms.

However, being constrained is dependent on a firm's board independence level at a specific point in time. While I show that the two groups (constrained and unconstrained) do not differ systematically in observables, board independence is still being endogenously determined by the firms. Hence, one may be concerned that the very fact that these groups have different levels of board independence indicates that these two groups are systematically different from each other. In such a case, we cannot rely on a simple diff-in-diff analysis. However, what is pertinent for the identification is that the two groups do not differ in their response to competition, i.e. the change in competition affects constrained and unconstrained[31] firms in the same way even in the absence of law. Then, the difference observed could be attributable to the effect of being constrained imposed by the passing of the law. Triple difference analysis allows me to address this potential concern.

For example, suppose there are two firms. Firm1 has board independence of 55% while firm 2 has board independence of 80%. If both receive tariff reduction in year 1999, both would be able to reduce their board independence freely in response to the change in

[31] note that firms were not really constrained before the law. The terms constrained and unconstrained here are being used to refer to firms with a certain level of board independence, i.e. below and above 55% respectively.

competition as the law has not been passed yet. Change in competition then should not affect their profitability differentially. However, if they receive tariff reduction, say, in 2005, firm 1 doesn't have as much leeway as firm 2 to reduce the board independence. Triple-diff not only allows me to capture the effect of this inability to freely reduce board independence on firm performance, but also allows me to estimate the effect of competition on the profitability of these two distinct groups in the absence of being constrained. Hence, I compare the changes in performance of constrained firms to the changes in performance of the unconstrained firms in response to tariff reduction pre and post the law using the following estimation.

$$\begin{aligned} ROA_{jikt} = \alpha_j + \alpha_t + \alpha_{it} + \beta_1 post\ tariff_{ikt} + \beta_2 constrained_j * post\ \ law_t + \\ \beta_3 constrained_j * post\ tariff_{ikt} + \beta_4 post\ law_t * post\ tariff_{ikt} + \\ \beta_5 constrained_j * post\ law_t * post_t ariffikt + X^t_{j\,ikt-1}\Gamma + u_{jikt}, \end{aligned} \tag{3}$$

Where ROA_{jikt} represents ROA for firm j in the year t operating in 2-digit SIC i and 4-digit SIC k. As before, in the baseline case, I define constrained equal to one if the firm at the time of tariff reduction has board independence equal to 55%. $post\ tariff_{ikt}$ is a binary variable equal to one for all years after t for a 4-digit SIC, k, that got a significant tariff reduction in year t. $post\ law_t$ is dummy equal to one for all years since 2003. As before, I include the firm fixed effects and 2-digit SIC specific time-varying fixed effects. In the baseline analysis, I use a total of 17 years as the sample period with 8 years before and 8 years after 2003 i.e. when the law was passed. The results are robust to varying sample periods.

The parameter β_3 reports the differential effect of tariff reduction on constrained firms before the law was passed. However, pre-law, firms were technically not constrained in reducing their board independence. Hence, we should expect β_3 to be statistically insignificant. The main parameter of interest is β_5, which gives us the differential effect of tariff reduction on ROA for constrained firms over unconstrained post-law in comparison to pre-law. If reducing board independence in response to an increase in competition is an optimal decision for firms, then firms which are unable to do so would suffer as a consequence. Hence, we expect β_5 to be negative.

Table VII presents the results. Column1 shows that there is no difference in the ROA of constrained and unconstrained firms once they receive tariff reduction pre law (i.e., β_3 is statistically insignificant), however, the triple diff coefficient is significantly negative. Change in competition affects ROA of constrained firms significantly negatively compared to unconstrained firms post law. Once firm and board controls are included in the estimation (column3), the magnitude of this effect is 10.45 percentage points, which is

economically significant as it corresponds to approximately 0.4 standard deviations decrease in ROA in response to tariff reduction of constrained firms compared to unconstrained firms.

4 Validity and Robustness

4.1 Validity of DiD

4.1.1 Do Industry Factors Predict Tariff Reductions?

To estimate the causal effect of tariff reductions on board independence, tariff reduction events should not be systematically aimed at industries with specific characteristics. It is most important to rule out the possibility that industry-level tariff cuts are targeted towards industries with specific board independence levels. While this is implausible, I provide evidence that average board independence of the industry does not predict tariff reduction events. I collapse all the firms variables at the industry level and estimate the following equation.

$$tariff\ reduction_{ikt} = \alpha_i + \alpha_t + \beta board\ independence_{ikt-1} + X^t_{i\,kt-1}\Gamma + u_{ikt}, \quad (4)$$

Table VIII presents the results. Column 1 shows that even without controlling for any other factors, lagged average industry board independence doesn't predict tariff reduction in that industry. After controlling for industry fixed effects (Column2), industry controls (Column3) and other board characteristics at the industry level (Column4), there is still no relation between industry board independence and tariff reduction events.

An additional concern could be that rather than the board independence of industry, it might be some other industry characteristics that predict tariff reduction events. For instance, if tariff reductions are targeted towards industries with low profitability (industry ROA) or high leverage. F-Test results show that the industries which receive tariff reductions are not systematically different across either industry characteristics or industry board characteristics even at 10% significance level.

4.1.2 Testing Parallel Trends

I use a difference-in-difference strategy to estimate the causal impact of tariff reduction on board independence. DiD strategy relies on the crucial parallel trends assumption. That is, in the absence of the tariff reduction event, board independence in the treated firms

should have changed in the same way as board independence in the control firms. This assumption, by definition, is not directly testable as we do not observe the counter-factual. However, we can study the pre-trends in the board independence in the treated firms relative to the control firms to provide evidence in favor of the parallel trends assumption. If we observe that the board independence was changing at the same rate in the treated firms and the control firms prior to the tariff reduction event, it is reasonable to believe that they would have been similar had the event not taken place.

To asses the validity of this identification strategy, I first assess the evolution of board independence before and after the tariff reduction event. I set the year before the tariff reduction event as the base year. I run the following regression:

$$board\ independence_{jikt} = \beta_1 T_{ikt}^{-5} + \beta_2 T_{ikt}^{-4} + \ldots\ldots + \beta_9 T_{ikt}^{+4} + \beta_{10} T_{ikt}^{+5} + \alpha_j + \alpha_t + \alpha_{it} + X_{j\,ikt-1}^{t} \Gamma + u_{jikt}, \quad (5)$$

Figure 2 shows that board independence was evolving at the same rate in the treated firms and control firms before the tariff reduction. There is no statistically or economically significant difference in changes in board independence in treated and control firms in the five periods prior to the event. The tariff reduction results in a sudden large decrease in board independence. The difference in the board independence of treated and control firms persists even 3 periods after the event.

4.1.3 Balancing Test

To show that the treatment and control firms do not systematically differ along any important dimension, I show that the firms that got tariff reduction were very similar in levels as well as trends in firm characteristics, including board independence, prior to the tariff reduction.

Table IX shows the differences in firm characteristics between firms affected by the tariff reduction (treated firms) relative to firms that are not affected by the tariff reduction (control firms). Panel A shows the differences in treated and control firms in levels. The treated firms have higher levels of cash, investment and R&D and lower levels of dividends. Since, I include firm fixed effects, these differences in levels are absorbed by the firm fixed effects and hence do not affect the estimates. Moreover, treated and control firms have similar levels of board independence, board size and board composition as shown in Panel C.

Panel B and D of Table IX shows the differences in trends among treated and control firms.

Treated and control firms have similar trends in firm profitability and other corporate policies. We see a significant difference in the size of the firms, with treated firms being slightly bigger by 0.0193,[32] however, I always control for firm size in all the estimations along with other firm controls. These results show that the firms affected by the tariff reduction are not systematically different from firms not affected by the reduction. These results strengthen our confidence that the differences in treated and control firms after the tariff reduction can be associated to the event rather than pre-existing differences among firms.[33]

4.2 Validity of DiDiD

4.2.1 Balancing Test

To ensure the validity of the identification strategy, it is essential that the two groups of firms, constrained and unconstrained, do not systematically differ along any important dimension. Table X shows the differences in firm characteristics between constrained and unconstrained firms in the first two years of the sample. We can see some differences between constrained and unconstrained firms when we look at levels. Constrained firms tend to be larger, more profitable with lower levels of investment and cash holdings as can be seen in Panel A. However, these differences in levels are absorbed by the firm fixed effects and hence do not affect the estimates. More importantly, the two groups of firms should be similar in their trends across various characteristics. Constrained and unconstrained firms have similar trend in firm profitability, and other corporate policies as shown in Panel C and D of Table X. This alleviates the concern that the estimates may be driven by pre-existing differences among firms.

4.2.2 Testing Parallel Trends

As I am analyzing the effect of law in conjunction with an exogenous change in competition on firm performance, it is pertinent to show that the firm performance (ROA) was changing at the same rate in the constrained and unconstrained firms pre-law. Figure 3 plots the results. We see that the constrained and the unconstrained firms had similar ROA prior to the law. These two groups of firms diverge after the law. There is a slight decrease in ROA of constrained firms one year after the law, however, it is statistically not significant. The difference in ROA for the two groups becomes statistically significant two years after the law is passed with the constrained firms having lower ROA relative to the unconstrained

[32] Although this number is statistically significant, it is economically irrelevant in magnitude. 0.0193 corresponds to a difference of 0.009 standard deviations of log(assets) or only 0.36% of the mean.

[33] As a robustness check, I repeat the main analysis using a matching procedure based on Mahalanobis distance to ensure that the two groups of firms are similar across various important dimensions. The results remain robust.

firms.

Moreover, as we are focusing on board changes as a result of tariff reduction and the constraints of the ability to alter the board composition, it is important to establish that the constrained firms do not have different board dynamics relative to unconstrained firms. In order to see whether the constrained and unconstrained firms have a similar trend in board independence prior to the law, I carry out analysis akin to parallel trends, where I allow for a different trend in board independence between constrained and unconstrained firms every year. If constrained and unconstrained firms have similar dynamics in board independence, and the regulation prevents constrained firms from decreasing board independence in response to a tariff reduction, while unconstrained firms are unaffected, we should expect to see the constrained and unconstrained firms to have similar trend prior to the regulation and the have a different trend after the regulation.

Figure 4 plots the results. We see that the constrained and the unconstrained firms had similar internal governance dynamics prior to the law. These two groups of firms diverge after the law, with the constrained firms having a higher trend in board independence relative to the unconstrained firms after the law. Since constrained firms are not able to decrease board independence freely in response to a tariff reduction, we see that the board independence in constrained firms increases with respect to unconstrained firms. The average board independence for constrained firms was around 40.9%, while average board independence for unconstrained firms was around 53.5% in 1997. The difference in average board independence between the set of constrained and unconstrained firms remained the same until 2001, i.e. prior to the law. By 2005, this difference decreased steadily to less than 5 percentage points. The difference in average board independence between the two groups of firms decreased to less than 1 percentage points by 2009.

4.3 Robustness Tests

4.3.1 Alternative thresholds to define tariff reduction event

In the first analysis, following previous literature, I consider a tariff reduction event only if the tariff reduction in an industry-year is three times larger than the average change in the same industry across years. I check the robustness of the effect of the increase in product market competition on board independence by changing the threshold used to define a tariff reduction event. Specifically, I use a threshold of 2x and 4x larger than the average change in the same industry as well as 2x, 3x, and 4x larger than the median change in the same industry.

Baseline results are obtained in the main analysis use a cutoff of 3x larger than the average in the industry. We see a negative and significant effect regardless of the threshold used. The effect is lower in magnitude with loser threshold (2x) and higher with a stricter threshold (4x). When using median instead of average industry change, we obtain stronger results than the baseline, and robust to the threshold used. The results highlight that the effect obtained is not driven by the arbitrary choice of the threshold used to define competition change.

4.3.2 Placebo test

In order to show that tariff reduction events are not systematically correlated with some unobserved firm characteristics, I carry out placebo regressions. I randomly assign significant tariff reduction (treatment) to the industries and estimate the Equation 1 1,000 times. If there are some unobserved differences among firms driving the results, the distribution of estimates will reflect those differences. If the distribution of placebo estimates is centered around zero and much smaller than the results obtained above, this would reassure us that the results obtained in the main analysis do not reflect some systematic differences among firms in the sample.

Figure 5 shows the results from the placebo regressions. Panel A shows that the distribution is centered around zero. The mean placebo estimate is -0.00015, with a standard deviation of 0.0153. The minimum and maximum placebo estimates are -0.047 and 0.055 respectively. These extreme values are lower than the coefficient obtained earlier (-0.0552). This means that randomly assigning tariff reduction to some firms relative to the others can not result in such a large and precise estimate as obtained in the above analysis.

Panel B of Figure 5 shows the CDF of t-values of the coefficients from the placebo regressions. If there are no systematic differences among the firms in the sample, we should get the absolute value of t-value to be greater than 1.96 only 5% of the times. This is what we find. Also, the t-value obtained in the main analysis lies far away from the distribution of the placebo t-values. These results from placebo estimates reassure that the results I find do not reflect systematic differences among the firms in the sample.

4.3.3 Alternative thresholds to define "Constrained"

I use other definitions to define the group of constrained and unconstrained firms. In the main analysis, a firm is categorized as constrained if it has board independence of 55% or lower at the time of tariff reduction. I provide estimates using both, stricter (50%)

and lenient (60%), thresholds to define the group of constrained firms. First 3 columns in Table XII report results with varying definitions of constrained while keeping the sample period constant. The result remains robust to the varying definition of constrained.

4.3.4 Alternative sample period

For the base analysis, I utilize eights years before and after the law was passed (i.e., 2003). However, I alter the sample period using 6, 10 and 12 years before and after the law to ensure that the findings are not sensitive to the sample period. Table XII, columns 3,4 and 5 show that results are robust to varying sample periods.

5 Conclusion

Having independent directors in the boards is considered a corporate governance "best practice" with institutional investors, regulators, and exchanges such as NASD and NYSE vouching for greater board independence for all firms. This pressure for greater board independence stems from the assumption that independent directors are better monitors. However, boards have two main functions; monitoring and advising the senior management. Hence, firms' monitoring needs as well as advising requirements determine the optimal level of board independence for a firm.

An increase in product market competition reduces the monitoring needs of the firm and potentially increases the advisory requirements of the firm, hence leading firms to reduce their board independence. Using changes in import tariff rates to identify exogenous changes in product market competition, I provide evidence that firms substantially adjust their board independence in response to increased competition. In particular, after controlling for firm and year fixed effects, 2-digit SIC industry specific trends, firm characteristics along with governance factors, I find that firms reduce their board independence by 5.52 percentage points, or 0.21 standard deviations in response to an increase in competition. This effect reflects a 12% decrease in board independence for a firm with average board independence.

Using listing requirements by NYSE and NASDAQ, which required the majority of the board to be composed of independent directors, in conjunction with the exogenous shock to competition, I carry out a triple diff estimation. I show that firms that are constrained in their ability to reduce board independence at the time of tariff reduction fare worse in term of firm profitability compared to unconstrained firms. In particular, being constrained

results in 6.98 percentage points lower return on assets (ROA) compared to unconstrained firms which correspond to 23.5% standard deviations decrease in ROA for a firm with average ROA.

This paper provides evidence of substitution between the internal and external governance of firms by showing that firms adjust their monitoring intensity accordingly when their competitive environment changes. Moreover, the results highlight that a forced increase in monitoring level, for instance by mandating a certain level of board independence, may actually harm some firms. These results shed light on the cost of regulations that do not take into account heterogeneity in firms' environments and apply one size fits all criteria.

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Figure1: Distribution of Tariff Reduction Events

This figure shows the distribution of tariff reduction events from 1980-2015. Ad-valorem tariff rate is computed as the duties collected at U.S. Customs divided by the Free-On-Board custom value of imports. Tariff reduction is considered an event when the reduction in an industry year is three times larger than the average tariff change in the same industry. The criterion used to define an event is explained in detail in the text in section 2.1.

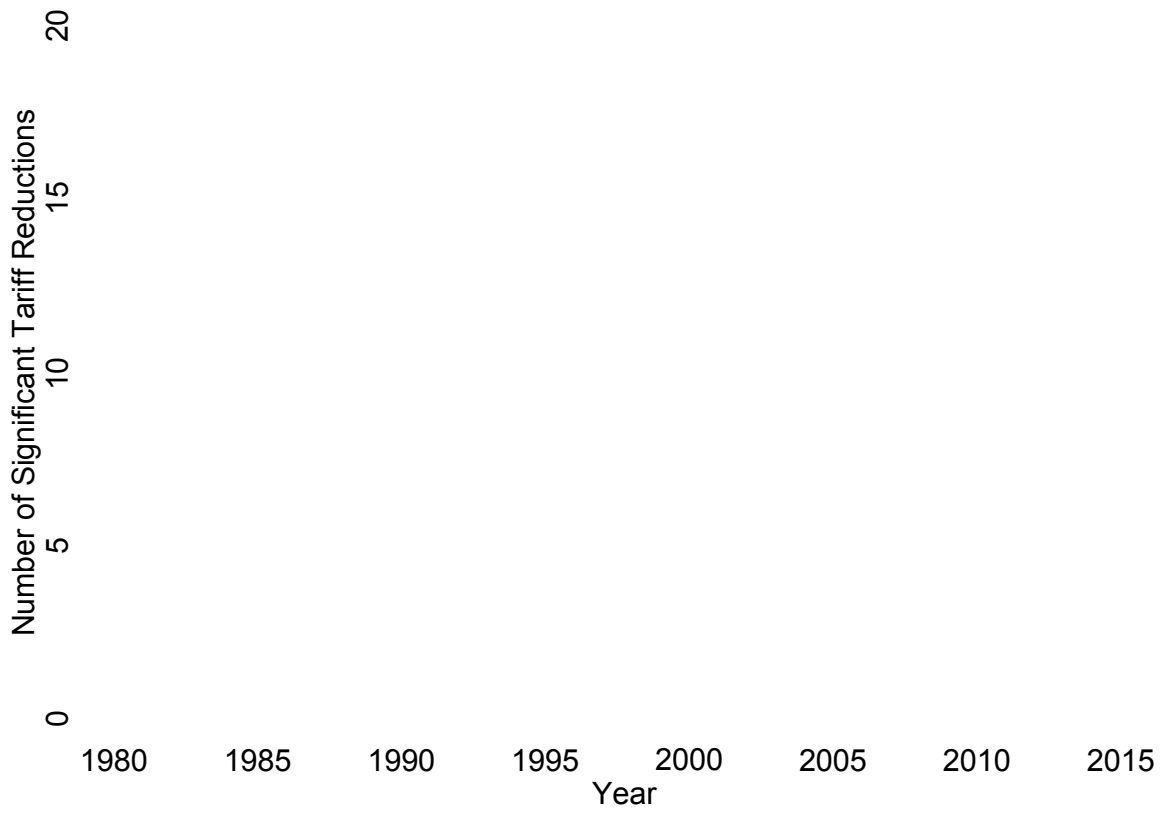

Figure2: Parallel Trends

This figure plots the evolution of the impact of tariff reduction on board independence. Board independence is measured as the proportion of independent directors in the board. Tariff reduction is equal to one for all firms which ever receive tariff reduction. I set the year before tariff reduction event as the base year and run the following regression:

$$brd\ ind_{jikt} = \beta_1 T_{ikt}^{-5} + \beta_2 T_{ikt}^{-4} + ... + \beta_9 T_{ikt}^{+4} + \beta_{10} T_{ikt}^{+5} + \alpha_j + \alpha_t + \alpha_{it} + X_{jikt-1}^{f} \Gamma + u_{jikt},$$

where $brd\ ind_{jikt}$ is the proportion of independent directors in the board of firm j which belongs to 2-digit SIC i and 4-digit SIC k in the year t. T_{ikt}^{+n} equals one for firms nth year after they receive tariff reduction and zero otherwise and T_{ikt}^{-n} equals one for firms nth year before they receive tariff reduction and zero otherwise. $\alpha_j, \alpha_t, \alpha_{it}$ are firm, year and SIC2-year fixed effects and $X_{jikt-1}^{f} \Gamma$ are one year lagged firm and board controls. Definitions of variables are provided in the Appendix.

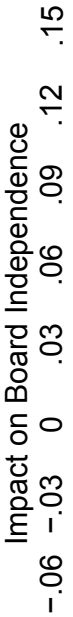

Figure3: Difference in trends in Firm Performance Pre and Post-regulation

This figure plots the evolution of differences in firm performance of constrained and unconstrained firms. Constrained is defined as equal to one if firm had board independence of 60% or less at the time of tariff reduction.

Figure4: Difference in trends in Board Independence Pre and Post-regulation

This figure plots the evolution of differences in board independence level of constrained and unconstrained firms. Constrained is defined as equal to one if firm had board independence of 60% or less at the time of tariff reduction.

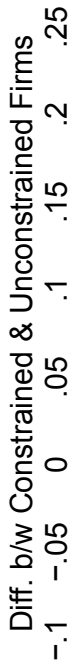

Figure5: Placebo Estimates

This figure plots the estimates from the placebo regressions. These estimates are obtained from randomly assigning significant tariff reduction (treatment) to the industries and estimating the impact of product market competition on board independence 1,000 times. Panel A plots the coefficients. The bold red line represents the coefficient obtained earlier (with the actual tariff reduction events rather than randomly assigned events). Panel B shows the Cumulative density function of t-values of the coefficients from placebo regressions. The bold red line indicates the t-value of the coefficient obtained earlier.

Panel A: Coefficients

Panel B: CDF of t-values of the coefficients

Table I: Descriptive Statistics

The table reports the descriptive statistics of the variables used. Number of observations, mean, standard deviation, median, minimum and maximum values of the variables are provided. Panel A contains the descriptive statistics of tariff variables. Panel B reports the summary statistics for the main corporate variables. Lastly, Panel C reports descriptive statistics of the main board variables and governance controls used in the analysis.

	N	Mean	Std Dev	Median	Minimum	Maximum
Panel A: Tariff Variables						
Tariff	3307	2.133	2.917	1.150	0.000	27.612
Change in Tariff	3212	-0.112	0.361	-0.010	-1.786	1.117
Tariff Reduction	3446	0.022	0.147	0.000	0.000	1.000
Panel B: Firm Controls						
ROA	23803	0.022	0.282	0.105	-1.305	0.394
Log(Assets)	23824	5.403	2.133	5.218	1.068	10.605
Cash	23819	0.259	0.258	0.171	0.000	0.956
Leverage	23796	0.179	0.193	0.131	0.000	0.940
Investment	23734	0.272	0.198	0.215	0.014	0.947
R¥&D	23827	0.104	0.163	0.047	0.000	0.955
Dividends	23803	0.010	0.024	0.000	0.000	0.179
Panel C: Board & Governance Controls						
Board Ind.	23827	0.636	0.246	0.667	0.000	1.000
Board Size	23827	6.804	2.708	7.000	1.000	21.000
Proportion of females in the board	23827	0.062	0.097	0.000	0.000	1.000
Mean board age	23824	58.087	5.868	58.625	29.000	80.600
pct american	23826	0.565	0.334	0.600	0.000	1.000
G Index	3905	8.942	2.663	9.000	1.000	17.000
Inst. Ownership	21417	0.376	0.364	0.304	0.000	1.000
Inst. Conc.	21417	0.353	0.391	0.125	0.000	1.000

Table II: Product Market Competition and Board independence

This table reports the estimated relation between board independence and increase in product market competition using OLS estimation. The sample contains firm-year observations from 1980-2015. The dependent variable, board independence, is measured as the proportion of independent directors in the board. Tariff reduction is equal to one for all firms which ever receive tariff reduction. Post equals one for all the years after tariff reduction takes place. Firm controls include lagged ROA, log(assets), cash, investment, leverage, R&D, dividends. Board controls include lagged board size, age and gender and ethnic composition. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

VARIABLES	(1) Board Ind.	(2) Board Ind.	(3) Board Ind.
Tariff Reduction * Post	-0.0337*	-0.0331*	-0.0311*
	(0.0162)	(0.0165)	(0.0153)
Observations	23,783	23,783	23,783
R-squared	0.6786	0.6789	0.6814
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes
Firm Controls	No	Yes	Yes
Board Controls	No	No	Yes

Table III: Product Market Competition and Board independence - Prior to 2002

This table reports the estimated relation between board independence and increase in product market competition using OLS estimation. The sample contains firm-year observations from 1980-2001. The dependent variable, board independence, is measured as the proportion of independent directors in the board. Tariff reduction is equal to one for all firms which ever receive tariff reduction. Post equals one for all the years after tariff reduction takes place. Firm controls include lagged ROA, log(assets), cash, investment, leverage, R&D, dividends. Board controls include lagged board size, age and gender and ethnic composition. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

VARIABLES	(1) Board Ind.	(2) Board Ind.	(3) Board Ind.
Tariff Reduction * Post	-0.0606***	-0.0601***	-0.0553***
	(0.0096)	(0.0096)	(0.0091)
Observations	10,036	10,036	10,036
R-squared	0.6994	0.6996	0.7026
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes
Firm Controls	No	Yes	Yes
Board Controls	No	No	Yes

Table IV: Product Market Competition and Board Composition

This table reports the estimated relation between an increase in product market competition and various measures of board composition using OLS estimation. Dependent variables in column1,2 and 3 are the number of independent, number of employee and number of linked directors in the board respectively. Dependent variable in column 4 is board size measured as log of total number of directors in the board. The sample contains firm-year observations from 1996-2001. Tariff reduction is equal to one for all firms which ever receive tariff reduction. Post equals one for all the years after tariff reduction takes place. Firm controls include lagged ROA, log(assets), cash, investment, leverage, R&D, dividends. Board controls include lagged board size, age and gender and ethnic composition, and whether board is classified or has a poison pill provision. Presence of institutional investors and their concentration is also included in the controls. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

VARIABLES	(1) Log(Ind Dir)	(2) Log(Emp Dir)	(3) Log(Link Dir)	(4) Log(Brd Size)
Tariff Reduction * Post	-0.1387**	0.1100*	0.2027**	0.0105
	(0.0662)	(0.0620)	(0.0961)	(0.0333)
Observations	1,373	1,373	1,373	1,373
R-squared	0.9099	0.8021	0.7764	0.9253
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Board Controls	Yes	Yes	Yes	Yes

Table V: Varying Exposure to Competition

This table reports the estimated relation between board independence and increase in product market competition for different sub-samples of the data, depending on their exposure to competition. Column 1, 2, 3 and 4 contain subsamples of diversified, focused, exporting and non-exporting firms respectively. Column 5 contains subsample of firms in low competitive industries (high HHI) and column 6 contain subsample of firms in high competitive industries (low HHI). The sample contains firm-year observations from 1980-2001. The dependent variable, board independence, is measured as the proportion of independent directors in the board. Tariff reduction is equal to one for all firms which ever receive tariff reduction. Post equals one for all the years after tariff reduction takes place. Diversified (Focused) is equal to one if it reports operations in more than one (only one) industry (4-digit SIC code) in a given year. Exporting is equal to one if a firm realizes positive sales abroad in a given year and non-exporting is equal to one if no sales abroad are realized in a given year. Firm controls include lagged ROA, log(assets), cash, investment, leverage, R&D, dividends. Board controls include lagged board size, age and gender and ethnic composition. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Board Independence					
	Diversified	Non-Diversified	Exporting	Non-Exporting	High HHI	Low HHI
Tariff Reduction * Post	-0.0208	-0.0553***	-0.0174	-0.0656***	-0.0590***	-0.0460
	(0.0365)	(0.0157)	(0.0231)	(0.0121)	(0.0158)	(0.0706)
Observations	2,189	7,574	2,368	7,479	2,119	1,988
R-squared	0.8343	0.7308	0.7313	0.7439	0.6717	0.7398
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Board Controls	Yes	Yes	Yes	Yes	Yes	Yes

Table VI: Competition, Regulation and Firm Performance - DiD

This table reports the DiD estimation. The dependent variable is firm performance measured by firm ROA. The sample contains firm-year observations from 2003-2015. Tariff reduction is equal to one for all firms which ever receive tariff reduction and zero otherwise. Post equals one for all the years after tariff reduction takes place and zero otherwise. Constrained is equal to one if the firm has board independence of 55% or lower at the time of tariff reduction. Firm controls include lagged ROA, log(assets), cash, investment, leverage, R&D, dividends. Board controls include lagged board size, age and gender and ethnic composition. Presence of institutional investors and their concentration is also included in the controls. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

VARIABLES	(1) ROA	(2) ROA	(3) ROA
Post Tariff	0.2100***	0.0291	0.2018**
	(0.0000)	(0.0789)	(0.0607)
Constrained * Post Tariff	-0.0603***	-0.1230**	-0.1012***
	(0.0000)	(0.0335)	(0.0146)
Observations	253	253	253
R-squared	0.8803	0.8943	0.8960
Sample	2003-2015	2003-2015	2003-2015
Constrained Definition	0.55	0.55	0.55
Firm Controls	No	Yes	Yes
Board Controls	No	No	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes

Table VII: Competition, Regulation and Firm Performance - DiDiD

This table reports the DiDiD estimation. The dependent variable is firm performance measured by firm ROA. The sample contains firm-year observations for eight years before and after the law was passed i.e. 2003. Tariff reduction is equal to one for all firms which ever receive tariff reduction and zero otherwise. Post equals one for all the years after tariff reduction takes place and zero otherwise. Constrained is equal to one if the firm has board independence of 55% or lower at the time of tariff reduction. Post Law equals one for all years after the passage of law i.e. 2003 and onwards. Firm controls include lagged ROA, log(assets), cash, investment, leverage, R&D, dividends. Board controls include lagged board size, age and gender and ethnic composition. Presence of institutional investors and their concentration is also included in the controls. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

VARIABLES	(1) ROA	(2) ROA	(3) ROA
Post Tariff	0.0062	0.0173	0.0188
	(0.0527)	(0.0452)	(0.0449)
Constrained * Post Law	0.0229	-0.0026	0.0125
	(0.0192)	(0.0297)	(0.0334)
Constrained * Post Tariff	0.0498	0.0262	0.0269
	(0.0401)	(0.0316)	(0.0314)
Post Nasdaq * Post Tariff	0.0333	0.0407	0.0524
	(0.0500)	(0.0384)	(0.0416)
Constrained * Post Law * Post Tariff	-0.1442***	-0.0877**	-0.1045***
	(0.0515)	(0.0337)	(0.0361)
Observations	7,533	7,533	7,532
R-squared	0.6270	0.6560	0.6561
Sample	+/- 8	+/- 8	+/- 8
Constrained Definition	0.55	0.55	0.55
Firm Controls	No	Yes	Yes
Board Controls	No	No	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes

Table VIII: Do Industry Board Independence Predict Tariff Reduction Events

This table reports the estimated relation between tariff reduction and lagged average industry board independence using OLS estimation. The sample contains industry-year observations from 1980-2015. The dependent variable, tariff reduction, is equal to one for the year in which an industry receives tariff reduction. Board independence at the industry-level is measured as the average board independence of all the firms in that industry. Industry controls include lagged indutry level-ROA, log(assets), cash, investment, leverage, R&D and dividends. Industry board controls include lagged industry-level board size, age and gender and ethnic composition. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

VARIABLES	(1) Tariff Reduc	(2) Tariff Reduc	(3) Tariff Reduc	(4) Tariff Reduc	(5) Tariff Reduc	(6) Tariff Reduc
Board Independence t-1	0.0078	0.0137	0.0167	0.0142	-0.0044	-0.0038
	(0.0097)	(0.0142)	(0.0149)	(0.0149)	(0.0099)	(0.0124)
Observations	3,299	3,299	3,299	3,299	865	865
R-squared	0.0406	0.0613	0.0634	0.0614	0.1431	0.1536
Industry Financial Controls	No	No	Yes	No	No	Yes
Industry Governance Controls	No	No	No	Yes	No	Yes
Industry Lobbying Controls	No	No	No	No	Yes	Yes
Industry FE	No	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
F-Test: Industry Lobbying Controls = 0					0.232	0.224
F-Test: Industry Governance Controls = 0				0.194		0.724
F-Test: Industry Financial Controls = 0			1.192			1.013

Table IX: Differences between Treated and Control Firms

This table shows the differences in firm and board characteristics between firms affected by the tariff reduction (treated firms) relative to firms that are not affected by the tariff reduction (control firms). Panel A and B show the differences in treated and control firms in levels, while Panel C and D show the differences in trends for treated and control firms. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

Panel A - Differences in Levels for Firm Variables

	ROA	Log(Assets)	Cash	Leverage	Investment	R&D	Dividends
Tariff Reduction	-0.0240	0.1249	0.0660**	-0.0194	0.0280	0.0304**	-0.0022**
	(0.0251)	(0.2077)	(0.0287)	(0.0119)	(0.0171)	(0.0135)	(0.0009)
Constant	-0.0437*	5.0845***	0.2848***	0.1893***	0.2885***	0.1225***	0.0104***
	(0.0252)	(0.1445)	(0.0275)	(0.0106)	(0.0142)	(0.0140)	(0.0008)
Observations	1,475	1,475	1,475	1,475	1,475	1,475	1,475
R-squared	0.2715	0.1672	0.3811	0.1225	0.1574	0.3404	0.2011

Panel B - Differences in Levels for Board Variables

	Board Ind.	Board Size	Prop. Female	Avg. Age	Prop. American
Tariff Reduction	0.0128	-0.0238	0.0104**	0.2304	-0.0050
	(0.0117)	(0.1098)	(0.0043)	(0.3103)	(0.0218)
Constant	0.6631***	7.0719***	0.0571***	57.6745***	0.5088***
	(0.0111)	(0.0813)	(0.0035)	(0.2424)	(0.0167)
Observations	1,475	1,475	1,475	1,475	1,475
R-squared	0.0468	0.0894	0.0675	0.0218	0.0310

Panel C - Differences in Trends for Firm Variables

	ROA	Log(Assets)	Cash	Leverage	Investment	R&D	Dividends
Tariff Reduction	0.0052	0.0193*	-0.0009	0.0029	-0.0012	-0.0009	-0.0001
	(0.0035)	(0.0110)	(0.0031)	(0.0023)	(0.0032)	(0.0019)	(0.0005)
Constant	-0.0108***	0.0563***	-0.0082***	0.0081***	-0.0183***	0.0048**	0.0003
	(0.0033)	(0.0089)	(0.0029)	(0.0019)	(0.0024)	(0.0019)	(0.0003)
Observations	1,472	1,472	1,472	1,471	1,472	1,472	1,472
R-squared	0.0068	0.0123	0.0175	0.0253	0.0127	0.0036	0.0024

Panel D - Differences in Trends for Board Variables

	Board Ind.	Board Size	Prop. Female	Avg. Age	Prop. American
Tariff Reduction	-0.0032	-0.0098	-0.0006	0.0128	-0.0022
	(0.0023)	(0.0209)	(0.0007)	(0.0449)	(0.0015)
Constant	0.0169***	-0.0471**	0.0039***	0.6155***	-0.0043***
	(0.0019)	(0.0200)	(0.0006)	(0.0343)	(0.0011)
Observations	1,472	1,372	1,472	1,472	1,472
R-squared	0.0135	0.0116	0.0121	0.0186	0.0079

Table X: Differences between Constrained and Unconstrained Firms

This table shows the differences in firm and board characteristics between constrained and unconstrained firms where constrained is defined as equal to one if firm had board independence of 60% at the time of tariff reduction. Panel A and B show the differences in treated and control firms in levels, while Panel C and D show the differences in trends for treated and control firms. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

Panel A - Differences in Levels for Firm Variables

	ROA	Log(Assets)	Cash	Leverage	Investment	R&D	Dividends
(mean) constrained at tariffreduction	0.1083***	0.3089**	-0.0733***	0.0006	-0.0659***	-0.0308*	0.0024
	(0.0315)	(0.1364)	(0.0199)	(0.0223)	(0.0128)	(0.0158)	(0.0019)
Constant	-0.1145***	4.4326***	0.3606***	0.1744***	0.3819***	0.1690***	0.0069***
	(0.0272)	(0.0836)	(0.0227)	(0.0159)	(0.0120)	(0.0162)	(0.0007)
Observations	587	588	588	588	586	588	588
R-squared	0.1384	0.1254	0.2794	0.0251	0.1466	0.2203	0.0620

Panel B - Differences in Levels for Board Variables

	Board Ind.	Board Size	Prop. Female	Avg. Age	Prop. American
(mean) constrained at tariffreduction	-0.1513***	-0.0636	0.0030	0.6427	0.0485**
	(0.0200)	(0.1931)	(0.0056)	(0.4351)	(0.0190)
Constant	0.5501***	5.7281***	0.0429***	54.4067***	0.5784***
	(0.0098)	(0.1039)	(0.0029)	(0.2287)	(0.0161)
Observations	588	588	588	588	588
R-squared	0.1510	0.0818	0.0509	0.0541	0.0196

Panel C - Differences in Trends for Firm Variables

	ROA	Log(Assets)	Cash	Leverage	Investment	R&D	Dividends
(mean) constrained at tariffreduction	0.0009	-0.0287	-0.0030	-0.0045	0.0107	0.0003	-0.0014*
	(0.0047)	(0.0226)	(0.0026)	(0.0044)	(0.0089)	(0.0033)	(0.0008)
Constant	-0.0043	0.1605***	-0.0034	0.0082*	-0.0221***	-0.0000	0.0014**
	(0.0034)	(0.0194)	(0.0026)	(0.0042)	(0.0055)	(0.0026)	(0.0007)
Observations	516	516	516	516	515	516	516
R-squared	0.0099	0.0323	0.0248	0.0193	0.0382	0.0040	0.0076

Panel D - Differences in Trends for Board Variables

	Board Ind.	Board Size	Prop. Female	Avg. Age	Prop. American
(mean) constrained at tariffreduction	0.0003	-0.0109	-0.0002	-0.0523	0.0051
	(0.0039)	(0.0453)	(0.0017)	(0.0629)	(0.0036)
Constant	0.0252***	0.0094	0.0019	0.7791***	-0.0029
	(0.0028)	(0.0335)	(0.0015)	(0.0433)	(0.0024)
Observations	516	490	516	516	516
R-squared	0.0543	0.0568	0.0170	0.0460	0.0204

Table XI: Product Market Competition and Board independence - with alternate thresholds to define tariff reduction events

This table reports the estimated relation between board independence and increase in product market competition using OLS estimation. Each column uses a different cut-off to define tariff reduction event mentioned in the last row of each column. The sample contains firm-year observations from 1980-2001. The dependent variable, board independence, is measured as the proportion of independent directors in the board. Tariff reduction is equal to one for all firms which ever receive tariff reduction. Post equals one for all the years after tariff reduction takes place. Firm controls include lagged ROA, log(assets), cash, investment, leverage, R&D, dividends. Board controls include lagged board size, age and gender and ethnic composition. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

VARIABLES	(1) Board Ind.	(2) Board Ind.	(3) Board Ind.	(4) Board Ind.	(5) Board Ind.	(6) Board Ind.
Tariff Reduction * Post	-0.0552***	-0.0322***	-0.0605***	-0.0625***	-0.0614***	-0.0841***
	(0.0090)	(0.0091)	(0.0105)	(0.0149)	(0.0201)	(0.0190)
Observations	10,063	10,063	10,063	10,063	10,063	10,063
R-squared	0.7018	0.7011	0.7016	0.7021	0.7020	0.7033
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Board Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Tariff Cut	Baseline	>2	>4	>3 Mdn	>2 Mdn	>4 Mdn

Table XII: Competition, Regulation and Firm Performance - with alternate definitions of constrained and alternate sample periods

This table reports the DiDiD estimation for the effect of competition and regulation on firm performance measured by firm ROA. First three columns use alternate definitions of constrained while keeping the sample period constant. Columns 4, 5 and 6 provide results obtained using different sample periods while keeping constant the definition of constrained. Tariff reduction is equal to one for all firms which ever receive tariff reduction and zero otherwise. Post equals one for all the years after tariff reduction takes place and zero otherwise. Post Law equals one for all years after the passage of law i.e. 2003 and onwards. Firm controls include lagged ROA, log(assets), cash, investment, leverage, R&D, dividends. Board controls include lagged board size, age and gender and ethnic composition. Presence of institutional investors and their concentration is also included in the controls. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

	Alternate thresholds			Alternate sample periods		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	ROA	ROA	ROA	ROA	ROA	ROA
Post Tariff	0.0188	0.0195	0.0208	0.0229	0.0441	0.0119
	(0.0449)	(0.0449)	(0.0455)	(0.0327)	(0.0657)	(0.0327)
Constrained * Post Law	0.0125	0.0126	0.0183	-0.0231		
	(0.0334)	(0.0334)	(0.0338)	(0.0239)		
Constrained * Post Tariff	0.0269	0.0259	0.0286	-0.0097	-0.0264	-0.0041
	(0.0314)	(0.0315)	(0.0299)	(0.0241)	(0.0219)	(0.0272)
Post Nasdaq * Post Tariff	0.0524	0.0511	0.0461	0.0290	-0.0850**	0.0175
	(0.0416)	(0.0419)	(0.0411)	(0.0436)	(0.0308)	(0.0544)
Constrained * Post Law * Post Tariff	-0.1045***	-0.1033***	-0.1025***	-0.0562**	-0.0399**	-0.0927*
	(0.0361)	(0.0364)	(0.0360)	(0.0264)	(0.0168)	(0.0517)
Observations	7,532	7,532	7,532	8,443	2,140	9,054
R-squared	0.6561	0.6560	0.6559	0.6589	0.7724	0.6317
Sample	+/- 8	+/- 8	+/- 8	+/- 10	+/- 6	+/- 12
Constrained Definition	.55	.5	.6	.55	.55	.55
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Board Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table XIII: Competition, Regulation and Tobin's Q

This table reports the DiDiD estimation for the effect of competition and regulation on firm performance. The dependent variable is Tobin's Q. First three columns use alternate definition of constrained while keeping the sample period constant to eight years before and after the law is passed. Columns 4, 5 and 6 provide results obtained using different sample periods while keeping constant the definition of constrained. Tariff reduction is equal to one for all firms which ever receive tariff reduction and zero otherwise. Post equals one for all the years after tariff reduction takes place and zero otherwise. Post Law equals one for all years after the passage of law i.e. 2003 and onwards. Firm controls include lagged ROA, log(assets), cash, investment, leverage, R&D, dividends. Board controls include lagged board size, age and gender and ethnic composition. Presence of institutional investors and their concentration is also included in the controls. Standard errors, clustered at 2-digit SIC level, are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

VARIABLES	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q
Post Tariff	0.1685	0.1685	0.1321	0.3911*	-0.4697	0.2409
	(0.2614)	(0.2614)	(0.2622)	(0.2075)	(0.8577)	(0.1612)
Constrained * Post Law	0.9094***	0.9094***	0.9188***	0.6209*	0.8035*	0.5029
	(0.2978)	(0.2978)	(0.2976)	(0.3564)	(0.4588)	(0.3131)
Constrained * Post Tariff	0.1405	0.1405	0.1995	-0.4761	0.7683	-0.4645*
	(0.2075)	(0.2075)	(0.1900)	(0.3181)	(0.6096)	(0.2533)
Post Nasdaq * Post Tariff	0.5041**	0.5041**	0.5545**	0.2395	0.1846	0.1675
	(0.1931)	(0.1931)	(0.2088)	(0.2062)	(0.4570)	(0.1934)
Constrained * Post Law * Post Tariff	-1.0901***	-1.0901***	-1.1542***	-0.7173**	-1.1788**	-0.5348*
	(0.2443)	(0.2443)	(0.2528)	(0.3527)	(0.5027)	(0.2695)
Observations	7,079	7,079	7,079	7,931	1,962	8,540
R-squared	0.5656	0.5656	0.5657	0.5670	0.6077	0.5679
Sample	+/- 8	+/- 8	+/- 8	+/- 10	+/- 6	+/- 12
Constrained Definition	.55	.5	.6	.55	.55	.55
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Board Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Appendix
Variable Definitions and Data Sources

Panel A: Tariff Variables (from Peter Schott's website)

Tariff	Duties collected at U.S. Custom divided by the Free-On-Board custom value of imports at the four-digit SIC industry
Tariff Reduction	Dummy variable equal to one if the reduction in the tariff rate is more than 3 times larger than the average tariff reduction in the industry, and zero otherwise.

Panel B: Firm Controls (from Compustat)

ROA	Ratio of operating income before depreciation (OIBDP) to firm's total assets (AT).
Log(Assets)	Logarithm of total assets (AT)
Cash	Ratio of Cash and short term investments (CHE) to firm's total assets(AT).
Leverage	Ratio of the book value of total debt (DLC+DLTT) to firm's total assets (AT)
Investment	Ratio of capital expenditure (CAPX) to total net property, plant, and equipment (PPENT).
R¥&D	Ratio of research and development expense (XRD) to firm's total assets (AT).
Dividends	The ratio of cash dividends (DV + DVP) to firm's total assets.

Panel C: Board & Governance Controls (from ISS and 13F)

Board Ind.	Proportion of independent directors in the board
Board Size	Number of directors in the board
Log(Ind Dir)	Logarithm of the number of Independent directors in the board
Log(Emp Dir)	Logarithm of the number of non-independent directors in the board which are employees of the firm
Log(Link Dir)	Logarithm of the number of non-independent directors in the board which are linked to the firm
pct american	Proportion of directors in the board with listed nationality as "American"
pct female	Proportion of female directors in the board
Inst. Ownership	Proportion of total shares outstanding held by the institutional investors (From 13F)
Inst. Conc.	The concentration index (HHI) of institutional ownership (between 0 and 1)

Panel D: Other Variables (from Compustat's Geographic Segment files)

Exporting	Dummy variable equal to one if a firm realizes positive sales abroad, and zero otherwise
Non-Exporting	Dummy variable equal to one if a firm realizes zero sales abroad, and zero otherwise
Focused	Dummy variable equal to one if a firm reports only one business segment, and zero otherwise
Diversified	Dummy variable equal to one if a firm reports more than one business segment, and zero otherwise

6 Online Appendix

Extending the data till 2015

The data on tariff reductions provided by Feenstra (1996); Feenstra et al. (2002); Schott (2010) is until the year 2005. However, for my second research question, I am using the regulation by NYSE and NASDAQ that limited the ability of the firms to reduce board independence. This regulation was passed in 2003, with a compliance period of one year. Hence, with a data till 2005, this yields very little time to see changes in the firm outcomes. Moreover, there are very few events in the year 2004 and 2005 which reduces the power to detect any firm level changes. Therefore, I extend the tariff reduction data until 2015 using the data on imports provided by Peter Schott on his website[34].

As before, for each industry-year, I compute ad-valorem tariff rate as a ratio of duties to imports and compute tariff reductions in the same way. That is, I consider tariff reduction events as one in which the tariff reduction in a year in an industry is three times larger than the average (absolute) change in the same industry across years.

Comparing the two data sets

The tariff reductions using imports data (extended data) are very similar to the ones using the Feenstra et al. data (original data). I carry out the comparison for the period present in both datasets i.e. 1992 to 2005. The average industry tariff rate in the original data is 1.395%. The extended data matches this average pretty well: the average industry tariff rate in the extended data is 1.435%. The average difference between the tariff rates in the two datasets is less than 0.025 percentage points or less than 2% for an average industry.

Since, I am interested in the significant tariff reduction events, the absolute difference between the tariff reduction in the original and the extended data is not a major concern. What really matters for the analysis are the deviations from the average tariff rate for each industry. Specifically, it is of greater concern that the deviations from the mean (standard deviation) are similar across the two datasets so that, on average, we find similar number of significant tariff reductions in both datasets. The standard deviation of tariff rate in an average industry in the original data is 0.305%. The standard deviation of tariff rate in an average industry in the extended data is 0.332%. Hence, the difference in standard deviation of tariff rate in an average industry in the two datasets is less than

[34] http://faculty.som.yale.edu/peterschott/sub*international.htm*

0.006 percentage points or less than 2% for an average industry. Table XIV provides the comparison of the categorization of treatment and control of an industry between the two datasets. During 1992-2005, out of 96 4-digit SIC industries, 41 are categorized as control and 38 as treated in both the datasets. This provides a match of over 80% with an even higher match when considering the firm year observations. The information has been summarized in Table XV.

The timing of the significant tariff reduction event is crucial for the identification. Although the significant tariff reduction events match reasonably well across industries, one potential concern could be that the timing of the events do not match in both datasets. That is, say, industry X received a significant tariff reduction in one year according to original data and in a different year according to the extended data. In order to see whether there are any systematic differences in timing of tariff reduction events, I construct the distribution of significant tariff reduction events across years. Table XVI shows the yearly distribution of events in the extended and original data. The yearly distribution of the events in both datasets seems very similar. Both datasets have a peak in the significant tariff reduction in the year 1995. Overall, the extended data matches perfectly with the total number of events with 100 events in each dataset over the common period present in both datasets i.e. 1992 to 2005.

Table XIV: Categorization of treatment status across industries between "Original" and "Extended" data

This table shows the categorization of an industry as either treated or control is each dataset from 1992 to 2005. "Original" data is the data provided by Feenstra (1996); Feenstra et al. (2002); Schott (2010) until the year 2005 and "Extended" data is the data on tariff reductions which I construct using the data on imports provided by Peter Schott until the year 2015. An industry is categorized as treated if the tariff reduction in an industry year is three times larger than the average (absolute) change in the same industry across. Other filters are also applied following Valta (2012) and are explained in the section on data and sample.

SIC	Comparison
2011	Treated in Both
2015	Treated in Original Data but not Extended Data
2024	Treated in Both
2033	Treated in Extended Data but not Original Data
2082	Control in Both
2084	Control in Both
2086	Treated in Original Data but not Extended Data
2211	Control in Both
2221	Control in Both
2273	Control in Both
2421	Control in Both
2451	Control in Both
2522	Treated in Extended Data but not Original Data
2611	Treated in Both
2621	Control in Both
2711	Treated in Both
2721	Treated in Extended Data but not Original Data
2731	Control in Both
2741	Treated in Original Data but not Extended Data
2761	Control in Both
2821	Control in Both
2833	Control in Both
2834	Control in Both
2835	Control in Both
2836	Control in Both

SIC	Comparison
2842	Treated in Original Data but not Extended Data
2844	Treated in Both
2851	Treated in Both
2891	Treated in Extended Data but not Original Data
2911	Treated in Both
3011	Control in Both
3021	Treated in Original Data but not Extended Data
3081	Control in Both
3089	Treated in Both
3221	Treated in Both
3231	Treated in Both
3241	Treated in Both
3312	Treated in Both
3341	Treated in Original Data but not Extended Data
3357	Control in Both
3411	Treated in Both
3442	Control in Both
3523	Treated in Original Data but not Extended Data
3531	Treated in Both
3533	Treated in Both
3559	Control in Both
3561	Treated in Both
3562	Treated in Both
3564	Treated in Both
3569	Control in Both
3571	Treated in Both
3572	Control in Both
3577	Control in Both
3578	Treated in Both

SIC	Comparison
3579	Treated in Extended Data but not Original Data
3585	Control in Both
3613	Control in Both
3621	Control in Both
3634	Treated in Original Data but not Extended Data
3651	Control in Both
3661	Control in Both
3663	Treated in Original Data but not Extended Data
3669	Treated in Extended Data but not Original Data
3672	Treated in Original Data but not Extended Data
3674	Control in Both
3677	Control in Both
3678	Treated in Extended Data but not Original Data
3679	Control in Both
3695	Treated in Both
3711	Treated in Both
3713	Treated in Both
3714	Treated in Both
3715	Control in Both
3721	Treated in Both
3724	Treated in Both
3728	Treated in Both
3743	Control in Both
3812	Treated in Both
3822	Control in Both
3823	Treated in Both
3824	Control in Both
3825	Treated in Both
3826	Treated in Both

SIC	Comparison
3827	Treated in Both
3829	Treated in Both
3841	Control in Both
3842	Treated in Both
3843	Treated in Both
3844	Treated in Both
3845	Treated in Both
3851	Control in Both
3861	Treated in Both
3873	Control in Both
3942	Control in Both
3944	Control in Both
3949	Control in Both

Table XV: Summary of the comparison between "Original" and "Extended" data

This table summarizes the differences in the the categorization of an industry as either treated or control is each dataset from 1992 to 2005 as well as the differences in the mean and standard deviation of the average tariff . "Original" data is the data provided by Feenstra (1996); Feenstra et al. (2002); Schott (2010) until the year 2005 and "Extended" data is the data on tariff reductions which I construct using the data on imports provided by Peter Schott until the year 2015. An industry is categorized as treated if the tariff reduction in an industry year is three times larger than the average (absolute) change in the same industry across. Other filters are also applied following Valta (2012) and are explained in the section on data and sample.

		Original - Extended	
	# of Ind	Mean	SD
Control in Both	41	-0.012	0.083
Treated in Both	38	0.003	0.153
Treated in Original Data but not Extended Da	10	-0.474	1.102
Treated in Extended Data but not Original Da	7	0.119	0.215

Table XVI: Number of events across years between "Original" and "Extended" data

This table shows the number of events in each year from 1992 to 2005 in "Original" and "Extended" data. "Original" data is the data provided by Feenstra (1996); Feenstra et al. (2002); Schott (2010) until the year 2005 and "Extended" data is the data on tariff reductions which I construct using the data on imports provided by Peter Schott until the year 2015. Tariff reduction event is defined following Valta (2012) where tariff reductions are considered as an event only when the tariff reduction in an industry year is three times larger than the average (absolute) change in the same industry across. Other filters are also applied following prior literature and are explained in the section on data and sample.

year	# of tariff reductions in "Original data"	# of tariff reductions in "Extended data"
1992	13	12
1993	12	7
1994	9	11
1995	27	31
1996	7	5
1997	9	8
1998	9	10
1999	6	4
2000	5	6
2001	0	1
2002	0	1
2003	1	2
2004	1	1
2005	1	1

CEO Ideology and Firm Performance

Faiza Majid[1]

Abstract

Using individual campaign contribution data, I measure the political ideology of U.S. CEOs over the period 1994 to 2014 and analyze the relation between CEO ideology and firm performance. To identify the causal effect of CEO ideology, I use a combination of time-varying effects and novel instruments based on the ideology of the pool of potential CEO hires. Across all specifications, I find that firms with Republican CEOs, on average, 6 percentage point higher ROA compared to firms with Democrat CEOs. Several alternate explanations such as time varying differences at state-industry level, political connections and firm fixed effects do not explain away the results.

JEL classification: G32, M51.

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1 Introduction

Why do some firms perform significantly better than others? Studies have found that these performance differences are persistent, enormous in magnitude[1], and relevant for similar sized firms, even within narrowly defined industry sectors (Syverson, 2004; **?**; Anderson and Reeb, 2003; Hsieh and Klenow, 2009; **?**). Researchers have highlighted the importance of managers in determining these differences (**??**). Bertrand and Schoar (2003) follow the top executives across multiple firms to empirically demonstrate the importance of individual managers in explaining a significant proportion of variation in the firm outcomes and Bennedsen et al. (2006) highlight the fundamental role of CEOs in determining firm performance by showing that CEO deaths, hospitalization events, and the death of family members have substantial effects on firm performance. However, these studies do not directly show the specific characteristics of the CEOs that matter.

Several researchers have proposed that CEO's beliefs, preferences, vision or "style" may matter for corporate outcomes (Rotemberg and Saloner, 1993, 2000). Some managerial traits highlighted in the literature include managerial overconfidence (Malmendier and Tate, 2005, 2008; Malmendier et al., 2011), and managerial optimism (Otto, 2014; Huang-Meier et al., 2016; Graham et al., 2013). Other characteristics such as risk preferences (Chava and Purnanandam, 2010; Sunder et al., 2017) and life experiences (Malmendier et al., 2011; Benmelech and Frydman, 2015; Bernile et al., 2017), are shown to be associated with firm outcomes as well. Kaplan et al. (2012) study the importance of a number of CEO characteristics for performance of firms involved in buyout and venture capital transactions.

While this prior work is informative, the inherent endogeneity of the CEO selection process limits our ability to draw a causal inference of the effect of managerial characteristics on corporate outcomes. Fee et al. (2013), highlight methodological concerns with prior work, and show that the CEO style has limited impact on firm policy when considering exogenous CEO departures. Hence, the question of whether CEOs play a causal role in determining firm performance remains contested.

In this paper, I shed light on the debate about the role played by CEOs in determining firm performance. Specifically, I analyze the relation between a quantitatively measurable

[1] For instance, Syverson (2004) reports that the plant at the 90th percentile of the productivity distribution makes twice as much output compared to the 10th percentile plant. Hsieh and Klenow (2009) report even higher difference in productivity of about 5 times between these percentiles in their study on Chinese and Indian firms and Anderson and Reeb (2003) document that best performing firm is nine times more profitable than an average S&P 500 firm.

proxy for CEOs preferences and beliefs, i.e. CEO political ideology, and firm performance. To circumvent the identification issues,[2] I use a combination of state and industry specific time trends and novel instruments to provide a causal estimate for the effect of ideology on firm performance.

I focus on CEO ideology because several studies in political science and psychology theorize and document differences in personality and preferences between liberals and conservatives (Wilson, 1973). Carney et al. (2008) provides a detailed review of all the theories identifying personality traits resonating with conservative and liberal ideology dating back to over half a century. Some of these characteristics identified by psychologists may affect corporate performance. For example, Republican ideology places great importance on an economic system with free and efficient markets while Democrat ideology believes that government may need to regulate to ensure the protection of rights and interest of all (Sattler, 2013; Hutton et al., 2015). These ideological differences may reflect in the management style of the firm which, in turn, may affect firm performance. Moreover, stark differences in the stance of both ideological groups with respect to equality may have an impact on firm's compensation and employment policies. Furthermore, a firm's attitude towards its various stakeholders such as consumers, society or its labor force may be determined by CEO ideology. For instance, the stance on environmental protection, or affirmative action may affect various firm policies such as the level of investment in CSR projects and effort and investment towards improving employees' working conditions.

Therefore, political ideology may affect several firm level policies simultaneously. In this paper, I address the broader question: Does the political ideology of the CEO have a net effect on firm performance? If so, is a specific ideology more beneficial for the firm than the other?

In a U.S. political setting, I take individual political contributions by firms' top executives and CEOs over the period 1994 to 2014 from Federal Election Commission (FEC) to construct a measure of political ideology. I categorize the CEOs into Democrats, Republicans and *equal-givers* based on their contribution history. Using this categorization, I analyze the relation between firm performance, measured by return on assets (ROA), and CEO ideology.

[2]Researchers have highlighted how management changes are endogenous events (Weisbach, 1988; Warner et al., 1988; Parrino, 1997) with a highly selected sample (Fee and Hadlock, 2003; Hayes and Schaefer, 1999). Fee et al. (2013) highlights multiple methodological concerns with prior work using turnover events including high serial auto-correlation and unknown properties for F-tests.

I find that, unconditionally, firms with Republican CEOs are associated with 3.3% higher ROA compared to firms with Democrat CEOs and the difference is 3.6% once I control for observed CEO characteristics. These differences are economically sizable, since they amount to about one third of the standard deviation of ROA or a quarter of the mean of ROA.

The positive association between ROA and CEO ideology may stem from a causal effect of ideology on performance or from selection if Republican CEOs are being systematically selected by firms in profitable states or industries. Indeed, I find that firms with Republican CEOs tend to be concentrated in profitable states and industries compared to firms with Democrat CEOs. However, the Republican-CEO premium is still a substantial 2.9% once I control for state, industry and year fixed effects as well as for differential trends by state and industry by including two and three-way fixed effects between state, industry and year.

Given the rich set of single, two and three-way fixed effects employed, the estimated coefficient is plausibly causal, since it is reasonable to argue that within a state and industry in a given year, the available candidates for CEO position may be limited, and thus, firm-CEO matches may not be driven by ideology.

In any case, the results suggest that CEO ideology matters for firms, since it either has a causal impact on firm performance or it is selected by firms for reasons correlated with performance. To isolate the causal effect of CEO ideology on firm performance, I propose two related instruments. The instruments build on the fact that a firm hires CEOs from a pool of available candidates, which is composed mostly of executives from inside the firm, or from intra-industry (Zhang and Rajagopalan, 2003) or local Yonker (2016) labor markets. Therefore, I construct a pool composed of the CEOs and other named executives in the same state and industry as the firm (excluding its CEO). The first version of the instrument consists of the ideology of the pool of named executives in the same state-industry-year as the firm. In addition, I control for all two-way fixed effects at state, industry and year level. Therefore, I exploit only the within state-industry variation in the pool of executives to estimate the impact of CEO ideology on the firm performance. Consistent with the OLS results, I find that firms with Republican CEOs outperform firms with Democrat CEOs by 0.7 standard deviations of ROA.

The second variant of the instrument is the ideology of the pool of potential CEO candidates in the industry-state at the time the CEO was hired. Because of specific investments,

entrenchment, and frictions in the turnover process, CEO replacements are relatively rare and may be triggered by specific events such as CEO quits or retirement, control changes or very poor performance. Therefore, the pool at the time at which the CEO was hired may be more relevant than the contemporaneous pool in determining the ideology of the CEO. This instrument also guards against the potential presence of time-varying omitted variables that might be correlated both with the ideology of candidates and firm performance, as any such variable at the time the CEO was hired is not likely to be related to firm performance today. Moreover, this instrument also allows the inclusion of three-way state-industry-year fixed effects in the estimation, controlling for potential time-varying state-industry factors that could bias the results. The results obtained using this instrument are qualitatively similar to the ones obtained using the previous instrument. With selection on ideology accounted for, these observed differences in firm performance can be attributed to the causal effect of ideology on firm performance.

The results are robust to several alternative measures of ideology. In the main analysis, I use a binary measure of CEO ideology which distinguishes between Republican and Democrat CEO. The results are robust to different definitions of this binary variable as well as to the use of a continuous variable that measures the fraction of a CEO's contributions allocated to Republican candidates. I also construct a more nuanced measure of CEO ideology by using the voting records of the legislators to whom CEOs donate as a measure of the candidates' ideology. In particular, I construct a measure of CEO ideology as the weighted average of the DW-Nominate score of the legislators[3] to whom the CEO contributes over her lifetime. Using this measure, I find that a one standard deviation increase in CEO conservatism increases firm performance by 0.15 standard deviations. Moreover, based on their DW-Nominate score, I categorize CEOs into four groups: Liberal Democrats, Moderate Democrats, Moderate Republicans, and Conservative Republicans. I find that all the groups do significantly better than the Liberal Democrats, while the Moderate Republicans have the best firm performance.

An important concern about my results is that they may reflect the impact of political connections on performance (identified, among others, by (Fisman, 2001; Faccio, 2006; Mian and Khwaja, 2004; Boubakri et al., 2012; Goldman et al., 2009; Correia, 2014)) instead of the effect of CEO ideology. The use of individual donations (as opposed to firm donations) in my measure of ideology mitigates this concern because individual donations are legally restricted to be small and prior work has shown that they are ideologically

[3] Introduced by Poole and Rosenthal (1985), DW-Nominate uses roll-call voting data of legislators in the Congress and the Senate to assign each politician on a continuous scale of liberal (-1) to conservative (1).

motivated (Burris, 2001; Ansolabehere et al., 2002; Gimpel et al., 2008; Barber, 2016). Moreover, if Republicans and Democrats have similar connections, then the difference estimates net out the effect of possible connections. Nonetheless, I explicitly control for political connections to isolate the effect of ideology from that of connections. The results remain robust to the inclusion of these controls.

Furthermore, I add firm level factors shown to be associated with CEO ideology in the literature. The difference in firm performance between Republican and Democrat CEOs remains significant even after inclusion of firm size, leverage, investment in tangible capital, investment in research and development and cash holding, suggesting that the effect of ideology of the CEO on firm performance cannot be reduced to one or two policy measures. Last, I examine whether the increased profitability of Republican CEOs is driven from higher risk taking. Using three different proxies for risk (standard deviation of ROA, volatility of stock returns and firm beta), I find no evidence that higher profitability of firms with Republican CEOs is a result of higher risk taking. The results remain robust to alternative measures of performance, the inclusion of firm fixed effects and addition of firm characteristics at the time of CEO change interacted with time trend.

This paper is related to the research that analyzes the role of top management in determining corporate outcomes. Bertrand and Schoar (2003) empirically document that manager fixed effects explain a significant proportion of variation in the firm outcomes. Bennedsen et al. (2006) highlight the importance of CEOs by showing that CEO deaths, hospitalization events, and the death of a family member have significant effects on firm performance. However, they do not directly show that CEO characteristics or management style matter. Moreover, Fee et al. (2013) do not find significant evidence that idiosyncratic managerial style matters for corporate outcomes once they use exogenous CEO departures. Therefore, the question of whether CEO characteristics and, in particular, "soft" characteristics, such as CEOs' preferences and beliefs, matter for firm performance remains open. This paper contributes to this debate by documenting that CEOs' political ideology influences corporate performance.

Moreover, I contribute to the rapidly growing empirical literature on the relation between political ideology and corporate outcomes. Political ideology has been shown to be associated with investment in CSR (Hong and Kostovetsky, 2012; Di Giuli and Kostovetsky, 2014), tax avoidance (Christensen et al., 2015), corporate litigation (Hutton et al., 2015), mergers and acquisitions (Elnahas and Kim, 2017), and remuneration policy (Chin and Semadeni, 2017; Gupta and Wowak, 2017). Kim et al. (2013) and Lee et al. (2014) show a

positive association between ideologically diverse boards and firm performance. Hutton et al. (2014) argue that Republican managers are more likely to have conservative personal ideology which leads them to adopt financially conservative policies such as lower debt, capital and R&D.[4] My work differs from these studies in multiple ways. First, I focus on the effect of CEO ideology on *overall* firm performance instead of specific firm policies. Second, I make an empirical contribution by proposing novel instruments to estimate the causal relation between CEO ideology and firm performance. Third, I introduce a new measure of CEO ideology using the DW-Nominate score of the legislators to which the executives contribute to, which allows us to exploit the variation within an ideological group. Finally, I also control for the potentially confounding effect of political connections.

The remainder of the paper is organized as follows: Section 2 describes the data along with the construction of the political measure used for the analysis. Section 3 highlights the empirical strategies used in the paper and section 4 presents the results obtained. Section 5 and 6 contains the robustness checks and the analysis on competing mechanisms, respectively. Lastly, section 7 presents the discussion and conclusion of the paper.

2 Data Sources and Variable Construction

I obtain data from three main data sources: the Federal Election Commission (FEC), Execucomp and Compustat. The sample consists of the universe of firms in Execucomp and covers the period 1992 to 2014. It contains a total of 3,405 unique firms and 42,267 named executives, out of which 6,884 are flagged as CEOs over the entire period of analysis. I use the names of the managers from Execucomp to obtain their ideology from FEC data.

I obtain the political contributions data from the Federal Election Commission (FEC) website. Along with the date and amount of transaction, campaigns are required to report the information (name, address, occupation) of the donors contributing $200 or more. I use these FEC individual campaign contribution files for the election cycles 1994 to 2014.[5] Since contributors' name in the FEC records is not reported consistently, I implement an

[4] To my knowledge, this is the only other paper that refers to the association between ideology and firm performance, however, their focus is on explaining the relation between managerial ideology and investment policies. They use September 11 attacks and Lehman Brothers bankruptcy as natural experiments to draw causal inferences. This paper differs from theirs' in its focus as well as methodological approach. I focus on the effect of political ideology on overall firm performance, while remaining agnostic regarding the specific channels. With respect to firm performance, they establish association while I utilize time varying state-industry fixed effects and instrumental variable approach to establish a causal relation. Moreover, the two papers differ in measurement of political ideology, as well as categorization of the ideological groups.

[5] Hence, the universe of campaign contributions is made by individuals from 1993 to 2014 for the Presidential, House and, Senate election cycles.

algorithm (explained in detail in Appendix A) to ensure consistent naming and a better match with Execucomp. Next, I characterize the affiliation of the committee to which the individual contributes.[6] This information is combined with the committee master file reported by the FEC which contains the address, designation, party affiliation, and, in case of a candidate committee, the unique candidate id. This gives us the political affiliation of the committee to which the individual donates the money. Finally, I match the individual contributions from the FEC data to the individuals we have in the Execucomp based on their full name.

Across the 1994 to 2014 FEC election cycles, there are more than 22 million individual contributions. An election cycle is considered to be 2 years as per FEC definition. Hence, we have 11 election cycles. Based on full name, I match 438,940 individual contributions to the executives in the Execucomp. These matched contributions correspond to 4,818 CEOs who made at least one contribution over the sample period, i.e. 70% of the CEOs available in the sample from Execucomp.

Lastly, I use data from Compustat to construct the financial variables. The dependent variable, Return on Assets (ROA), is computed as the ratio of operating income before depreciation to the book value of firm's total assets. Other financial variables employed include return on equity, leverage, R&D, book-to-market ratio, firm size, return on sales and earnings per share. All financial variables are winsorized at the 1st and 99th percentile values. All variables are described in detail in Appendix B.

2.1 Individual Contributions as a Proxy for Ideology

The 1974 Federal Election Campaign Act (FECA) establishes a set of rules regarding the sources of contributions, the amount that can be donated, and disclosure principles. The FECA categorizes two sources of funding: individuals and interest groups. Interest groups include firms, labor organizations, membership organizations, trade associations, and other cooperatives. A firm (an interest group), as an entity is not allowed to contribute directly towards candidates' campaign. It can, however, set up a PAC, which is a political committee organized for the purpose of raising and spending money to elect and defeat candidates. A firm is not allowed to use its treasury to fund the PAC. Therefore, company

[6] When signing up for candidacy, each candidate must designate a political committee as his/her principal campaign committee or authorize a committee to receive and expend resources on his/her behalf. The name of these principal and authorized committees would necessarily contain the name of the candidate. There may also be committees not formally authorized by the candidate who make expenditures to support the candidate. These may be interest groups. Hence, I only focus on the contributions made by individuals to principal and authorized committees.

executives contribute to the PAC. An individual, however, can contribute in two ways; directly donate to a candidate or his/her party committee and/or via a political action committees (PAC).

The literature on campaign contributions has shown that PACs are concerned with gaining access to legislators to tilt the legislation in their favor (Snyder Jr, 1990; Hall and Wayman, 1990). Empirical studies support this "access-seeking" theory. PACs contribute more to incumbents who hold powerful positions (Grier and Munger, 1991; Romer and Snyder, 1994). Politicians who are very old (suggesting a higher probability of retirement or death and hence, a higher probability that the relation will end) or who announce retirement receive much lower PAC contributions (Kroszner and Stratmann, 1998; Romer and Snyder, 1994). Grier et al. (1994) find that PACs belonging to industries which stand to gain the most from government assistance contribute significantly more.

Conversely, individual contributions are associated with the alignment of the political ideology of individuals and the candidate they support (Burris, 2001; Ansolabehere et al., 2002; Gimpel et al., 2008). Ansolabehere et al. (2002) argue that individual donations are, for the most part, ideologically motivated. They find that while individuals are the biggest contributors in campaign finance, each individual contributes a rather small amount.[7] Analyzing the giving pattern of the top executives, the authors show that they contribute much less than their maximum limit, their contribution represents only about 0.05 percent of their annual income which happens to be even lower than they what they give to charities (another consumption good of similar nature). This meager average contribution size suggests that the private benefits that motivate PACs to contribute cannot be bought by these individuals. Using an original survey data on donors for the 2012 election cycle combined with PAC contributions, Barber (2016) shows that PACs consistently give to both parties, while individuals almost entirely contribute to candidates from one party. Moreover, using within-legislator analysis to isolate the effect of incumbency on donors,[8] the author shows that PACs contribute significantly more to the incumbents[9] while individuals' donations are unaffected by incumbency. Furthermore, Barber (2016) shows that PAC contributions to candidates that change party while in office remain unaffected, while the individuals align their contributions accordingly.

[7] This finding is substantiated by Cooper et al. (2010) as well. They find that largest group contributors are individuals, contributing about 80% and 60% of the total campaign contribution for Senate and House elections respectively.

[8] They consider the legislator who was a challenger in time t, won and now is an incumbent in time $t+1$. They compare the donation portfolio for this legislator from time t to t+1 to get the incumbency effect on donations.

[9] Consistent with the theoretical argument that incumbents are more valuable to access oriented groups/individuals.

Hutton et al. (2014) and Christensen et al. (2015) analyze the individual contributions of top executives, and compare their measures of ideology based on contributions with the self-reported ones using *Marquis Who's Who database*. Christensen et al. (2015) found an 86% match of the self reported ideology with the one they obtained using contributions, which increases to 96% when considering only "polar" individuals, i.e. executives who made political contributions to just one party.

Given the findings in the literature on the motivation for political contributions, I use only direct donations by individuals to candidate committees to capture CEO ideology.

2.2 Measurement of Political Ideology

Individual political contributions are given to candidates (House, senate, presidential) or party committees. For each executive, I compute the total contribution given to Republican candidates and committees, and Democratic candidates and committees in each year. I compute the Political Ideology Index (PII) of the CEO similar to Hong and Kostovetsky (2012), Hutton et al. (2014), and Lee et al. (2014).

$$PII_i = \left(\sum_{t=1}^{T} REP_{it} - \sum_{t=1}^{T} DEM_{it}\right) \Big/ \left(\sum_{t=1}^{T} REP_{it} + \sum_{t=1}^{T} DEM_{it}\right) \quad (1)$$

REP_{it} and DEM_{it} denote the total dollar amounts of political donations made by individual i in year t to the Republican and Democratic Parties over the sample period, respectively. The index PII_i is a measure between -1 and 1, where a higher number represents a more Republican political ideology. For instance, a CEO who gives only to Republican (Democrat) candidates and committees throughout his contribution history has an index of 1 (-1). By construction, those individuals that give equally to both parties will have an index value equal to zero.

Similar to prior literature, the entire contribution history of the CEO is used to compute the index i.e. contributions before becoming a CEO as well as after. Hence, the index does not change over time for an individual. This not only minimizes the measurement error, but also aims to capture the ideological component of the contributions.[10]

[10] For instance, a CEO can give more to Republicans relative to Democrats in a year in which Republicans are in power so that a one-year measure may reflect strategic rather than ideological giving. However, if we observe an individual consistently giving to one party throughout her contribution history, it is likely that such giving reflects her ideology.

In my sample, PII has a mean of 0.38 which suggests that, on average, CEOs are more Republican than Democrat. Out of 4,818 CEOs who contribute at least once, there are 1,613 (33.5%) CEOs who donate only to Republican candidates or party over the entire sample period (with PII =1), while 504 (10.5%) CEOs contribute solely to Democrat candidates (with PII= -1). For 282 (5.9%) CEOs, the total amount given to Republicans and Democrats over the sample period is exactly equal (PII=0). Similarly, out of 42,267 executives in Execucomp, 22,152 (52.4%) executives contribute at least once during the sample period. Of these, 7,547 (34.1%) executives contribute only to Republican candidate or party over the entire sample period (with PII =1) while 3,436 (15.5%) executives contribute solely to Democrat candidates (with PII= -1).

In the literature, the index has been assigned a value of zero not only when the managers contribute exactly equally to both parties but also when they do not contribute at all (Lee et al., 2014; Hutton et al., 2014). However, it is important to distinguish between these two groups because CEOs who contribute are more likely to be politically connected compared to CEOs who do not contribute. Therefore, I consider equal contributors and non-contributors as two separate categories. Moreover, to disentangle the effect of ideology from that of political connections, in my baseline regressions, I restrict the sample to contributors only. This would net out any potential effect of political connections.

Prior literature has assumed a linear relation between CEO ideology and outcome variables. However, this may not necessarily be the case.[11] Moreover, PII does not allow a direct comparison between the two ideological groups, as having a lower index value may imply being less Republican but doesn't necessarily imply being a Democrat. To guard from these concerns, I consider a categorical measure of ideology which characterizes an executive as Republican, Democrat or Equal-giver based on certain cut-off for the index[12]. In the baseline case, I define the executives' ideologies as follows:

$$\text{Ideo}_i = \begin{cases} \text{REP} & \text{if } \text{PII}_i = 1 \\ \text{DEM} & \text{if } \text{PII}_i = -1 \\ \text{EQUAL} & \text{if } -0.5 \leq \text{PII}_i \leq 0.5 \end{cases} \quad (2)$$

[11] That is, the effect of being 1 standard deviation more republican (e.g. from 0.3 to 0.7) may be different from the effect of being less democrat (e.g. from -0.7 to -0.3) or a change in ideology altogether (e.g. from -0.2 to 0.2).

[12] While the cut-off to define the CEO as Equal-giver is arbitrary in ***Ideo***, I take different values for the cut-off to demonstrate that the results are robust to these alternate cut-offs.

Panels A and B in Figure 1 show histograms of the Political Ideology Index (PII) with CEOs and executives who contribute in more than one cycle, respectively. We see that the distribution is bi-modal, with the modes being -1 and 1, respectively. The distribution is also continuous in the interval -1 and 1 with no obvious cut-offs to characterize the CEOs and executives as Republican or Democrat.

According to *Ideo*, I categorize 1043 CEOs as Republican, 264 as Democrats and 912 as Equal-givers. Table I shows the number of CEOs in each category according to the old and new measures. Moreover, it also shows the mean giving by CEOs of each category to their respective parties. As seen in the table, the mean giving ($ amount as well as number of times) by Republicans to Republican party and candidates is comparable to the mean giving by Democrats to Democratic party and candidates.

Table II reports descriptive statistics of the key variables and their correlations with the different measures of ideology. Panel A contains the political measures. The table shows that 47% of the firm-year observations correspond to firms managed by Republican CEO, while 11% of the firm-year observations correspond to firms managed by Democrat CEO. The remaining 42% correspond to firms managed by CEOs categorized as Equal-givers.

Panel B contains the CEO characteristics. An average CEO is a 55 years old male, with an average tenure of 8 years in the firm as a CEO. Age and male are positively correlated with being Republican and negatively correlated with being a Democrat CEO. However, the correlations are small in magnitude. Similarly, other CEO characteristics; tenure, ability and education are also not highly correlated with measures of ideology. Panel C reports the descriptive statistics of firm characteristics constructed using Compustat data. The main dependent variable is ROA. The average firm performance in the sample is 0.13 with a standard deviation of 0.10. None of the firm characteristics are very highly correlated with the measures of ideology either.

3 Empirical Analysis

3.1 Univariate Analysis

Apriori, it is difficult to predict the direction or the magnitude of the effect. Therefore, first, I analyze the unconditional relation between CEO Ideology and firm performance as measured by return on asset (ROA). Using a continuous measure of ideology (PII), I

obtain a positive and statistically significant coefficient of 0.017 with a standard error of 0.0035. Using the categorical variable, *Ideo*, I find that firms with Republican CEOs are associated with 0.026 higher ROA compared to firms managed by equal-givers and with 0.033 higher ROA compared to Democrat CEOs.

Figure 2 shows a scatter plot between ROA and CEO ideology.[13] We see a clear positive association between firm performance and having a Republican CEO. Hence, unconditionally, firms with Republican CEOs have better performance as compared to firms with Democrat CEOs.

3.2 The Relation between CEO Ideology and Firm Performance

There are numerous scenarios in which ideology may result in observable differences in firm performance. It is important to distinguish between them and identify to which scenario the results can be attributed to. On one hand, these uni-variate results could reflect the causal effect of ideology, where, as long as the firms are not selecting CEOs based on ideology, differences in ideology would result in observed performance differences. However, this positive association between performance and Republican ideology could also arise if CEOs with different ideologies are matched to firms with different performance levels, or CEO ideology is correlated with some other CEO characteristics that either has a causal effect on performance or influences firm-CEO matches. To shed light on the possible explanations behind the uni-variate results, I consider several factors that could drive the correlation between CEO ideology and firm performance.

CEO characteristics such as the level of knowledge and experience of the CEO are important for firm performance. If these characteristics are correlated with CEO ideology, not controlling them would bias the results. For instance, if more experienced CEOs are better for firm performance, and Republican CEOs tend to be more experienced, then I would obtain a positive association between firm performance and Republican CEO. Thus, I control for CEO characteristics such as age and gender. I add CEO tenure, measured as the number of years as a CEO in the firm, as a proxy for CEO ability, to the estimation. Moreover, to proxy for experience, I construct a variation of 'tenure' where I measure the number of years the individual has been present in any firm in the Execucomp in any managerial position. I also control for CEO education based on the degree of qualification[14]

[13] To construct the scatterplot, PII is used by dividing it in100 bins, so that the figure shows the average ROA within each bin.

[14] I obtain data on education for the CEOs using Boardex and construct a categorical variable, where the categories are:

I further explore potential selection problems that could give rise to the uni-variate results. Firstly, there could be time varying factors common to all firms such as economic recessions and booms. If firms hire more Republican CEOs during booms while more Democrat CEOs during recessions, the estimated coefficient on REP and DEM may partially capture this effect. Figure 3 shows the variation in Republican and Democrat CEOs and firm performance over time. We see a very stable pattern in all three variables. The average proportion of firms with Republican CEOs remains stable between 0.25 and 0.30 from 1992 to 2013. Similarly, the average proportion of firms with Democrat CEOs stays between 0.05 and 0.10 during the sample period. The average ROA seems to be pretty stable over time as well. Overall, the figure suggests that there is no stark time trend in any of the three variables.

Secondly, there might be systematic differences among industries with respect to CEO ideology and ROA. That is, there may be more "Republican" industries and more "Democratic" industries and they may exhibit different performance levels. For example, the firearm industry has much better ROA than IT industry. Moreover, firearms industry predominantly has Republican CEOs while IT industry is dominated by Democrat CEOs. Figure 4 shows a clear positive correlation between average industry CEO ideology and average industry firm performance. For instance, tobacco firms ($SIC - 21$) have a high average ROA and are predominantly run by Republican CEOs. On the other hand, social services firms ($SIC - 83$) are predominantly run by Democrat CEOs and have low profitability. Figure 4 highlights the importance of CEO ideology at industry level.

Thirdly, there could be systematic state level differences in ROA and CEO ideology. If firms in 'Red' states such as Oklahoma, Utah and Wyoming are more likely to be managed by Republican CEOs and are also more profitable than firms in 'Blue' states such as, Hawaii and Vermont which are more prone to be managed by Democrat CEOs, the estimated coefficient on REP and DEM may partially reflect this effect. Figure 5 shows the relation between state's average CEO ideology and its average firm performance. Again, we see a clear positive correlation between state's average ideology and average firm performance. For instance, firms in Hawaii are mostly managed by Democrat CEOs and have low average ROA. On the other hand, firms in South Dakota are mostly managed by Republican CEOs and have high average ROA. This suggests that state is an important correlate of both ROA and CEO ideology and should be controlled in the estimation.

less than college degree, college degree, graduate degree, doctorate degree and specialization in accounting, finance and business.

These state and industry trends highlight the importance of CEO ideology as they suggest that Republican CEOs tend to be concentrated in firms in profitable industries and profitable states. This systematic correlation between the CEO ideology and firm performance at industry and state level suggests that either Republican CEOs are better at increasing firm performance and hence we see this correlation, or there might be selection at play where high performing states and industries select Republican CEOs. While it is interesting to analyze the factors giving rise to this possible selection, the focus of this paper is to estimate the causal effect of ideology on firm performance. Therefore, I add time, industry and state fixed effects to the estimation to get an effect of CEO ideology, net of these industry and state specific factors.

While these fixed effects control for the time invariant differences among states and industries, and the shocks common to all the industries, there might still be threats to identification. For instance, there might be time varying shocks to a particular industry or particular state which may be correlated with the firm performance as well as CEO ideology.

First, certain industries may receive a shock in some year that may affect their performance (ROA), and at the same time affect CEO ideology. For instance, some industries may experience stronger regulatory laws which may directly impact their performance. If the firms in this industry believe that under these circumstances it may be beneficial to hire CEOs of a specific ideology, then the identification assumption may not hold. Second, certain states may receive positive or negative shock in some year which may affect the performance of the firms in that state and may also affect CEO ideology. For instance, some states may receive a Republican governor, or a majority of Republicans in the state congress, which may reduce the overall regulation and oversight of all the firms in that state, thus increasing the profitability. If the firms in these states choose to hire Republican CEOs during this time period due to the role of potential connections, the estimated coefficient on REP and DEM may partially capture this effect. Third, there might by differences among firms belonging to the same industry, but different states. For instance, the firms belonging to financial industry may have different profitability in New York compared to New Mexico due to firm agglomeration, difference in productivity among states, and other differences. These differences could overlap with the differences in the CEO ideology. Thus, I control for *industry-year*, *state-year* and *state-industry* fixed effects to eliminate all these concerns.

After controlling for all the single and two-way fixed effects, most of the unobserved factors

affecting ROA and CEO ideology are accounted for. However, one may argue that time varying shocks specific to a certain industry and state may be driving the results. For instance, changes in regulation of industries among states. That is, some states introduced more regulations, or relaxed some regulations on certain industries than the others. If these changes are associated with CEO ideology, the estimated coefficient on REP and DEM may be biased. Therefore, I add *state-industry-year* fixed effects to the estimation to obtain unbiased estimates.

The equation below captures the estimation.

$$ROA_{jist} = \beta_0 + \beta_1 REP_{jist} + \beta_2 DEM_{jist} + X^t_{j\,ist}\gamma + \alpha_s + \alpha_i + \alpha_t + \alpha_{it} + \alpha_{st} + \alpha_{is} + \alpha_{ist} + \omega_{jist}, \quad (3)$$

where j represents the firm, belonging to industry i, located in the state s, at year t. REP_{jist} and DEM_{jist} are binary variables equal to one if the CEO ideology for firm, j, in year t, is Republican and Democrat respectively. The reference group is Equal-givers. $X^t_{j\,ist}$ is vector of CEO-level controls and α capture various fixed effects.

The identification assumption to obtain unbiased estimates of β_1 and β_2 is $E(\omega_{jist}|\alpha_s + \alpha_i + \alpha_t + \alpha_{it} + \alpha_{st} + \alpha_{is} + \alpha_{ist}) = 0$. That is, conditional on CEO characteristics and all the fixed effects, the unobserved factors impacting firm performance, ω_{jist}, are uncorrelated with the CEO ideology.

3.3 Instrumental Variables

Even after controlling for CEO characteristics as well as firm characteristics that CEO cannot easily alter, the possibility of selection may still pose threat to identifying a causal effect of ideology. The identification assumption could be violated in the presence of selection at a state-industry level. For instance, if high (low) performing firms systematically choose Republican (Democrat) CEO. However, it is reasonable to argue that within a state and industry in a given year, the available candidates for CEO position may be limited. The criteria on which to choose a CEO maybe composed of a bunch of characteristics of first order importance, such as, qualification, experience, expertise and reputation, and thus, firm-CEO matches may not be driven by ideology. Hence, after controlling for all the fixed effects, we can assume ideology of the CEO to be plausibly exogenous to the selection of the CEO. Nonetheless, to explicitly address the potential endogeneity problem, we need to come up with a setting in which we can achieve exogenous variation in the CEO ideology i.e. the choice of the firm when hiring a CEO is restricted with respect to

ideology. Hence, I construct an instrumental variable for the ideology of the CEO that a firm selects.

A firm hires from the pool of available candidates. Usually, firms hire CEOs from inside the firm as not only does this hiring strategy serve as an incentive mechanism for the firm's executives and ensure stability, but also allows the firm to benefit from the insider's knowledge of the firm (Zhang and Rajagopalan, 2003). Moreover, the chances of a mismatch between the firm and the CEO are lower as the firms have greater information about the skill sets of the insider relative to an outsider (Harris and Helfat, 1997). However, firms may sometimes choose a CEO from outside the firm (Howard, 2001; Guthrie and Dutta, 1997). The primary source then becomes the intra-industry labor market, because an executive from within industry embodies industry specific skills useful for the firm operating in that industry which an executive from outside of industry may not possess (Zhang and Rajagopalan, 2003). Cremers and Grinstein (2013), using a universe of firms from Execucomp during 1993-2005, demonstrate that 81% of the new CEOs are appointed from within the same industry. Moreover, Yonker (2016) highlight the role of geography in the market for CEO, by documenting that firms are five times more likely to hire locally. Therefore, I construct a pool which is composed of the CEOs and other named executives in the same state and same 1 digit SIC code of the firm.[15] This pool would be representative of the pool of potential candidates from which a firm can hire a CEO. The variable used to instrument the CEO ideology is the ideology of the pool of these potential candidates for the CEO constructed at the state and industry level.

I consider two versions of the instrument. The first one is constructed at the state and industry level for a given year. Hence, the variation in the pool from which a CEO can be hired arises from entry and exit of executives in the pool each year. While each firm can choose its own executives, no one firm has control over the choice of executives of other firms in the pool. Hence, we have a variation in the ideology of the pool which does not depend on a specific firm's decisions. Not only is there a substantial variation between pools, but within pools as well.

Figure 6 shows the variation for two industries (manufacturing and services) for three different states (California, New York and Texas) to illustrate the variation. In the manufacturing industry in California, 44% of the executives were Republican, while 17%

[15] Even though it is a coarse measure of industry grouping, 1 digit SIC code is used in the main analysis because it yields a bigger pool for the firms to choose from, which is less restrictive and hence closer to reality. When pools are constructed using 2 digit SIC, the number of pools increase and the number of firms per pool are much less. Nonetheless, I carry out the estimation using 2 digit SIC as well and the results remain robust.

were Democrat. The number of executives who are Republican steadily decreased to 31% and Democrats increased to 18% over the 20 years. New York and Texas, on the other hand, experienced higher variation in the Republican and Democrat executives over the sample period. In 1992, in the manufacturing industry in New York, 44% of the executives were Republican and 30% were Democrat. In 2000, the proportion of Republican executives decreased to 26%, while the number of Democrat executives increased to 32%. The proportion of Republicans decreased further and proportion of Democrats increased further in the next years, with 17% of the executives being Republicans and 43% being Democrats by 2012. Similarly, Texas saw an increase in the Democrat executives over the sample period, while the Republican executives remained the same.

The variation in this instrument is the within state and industry variation in the pool of executives. For example, I do not compare the executive ideology in the same industry in different states (e.g. manufacturing industry in New York to manufacturing industry in Texas) or two different industries in same state (e.g. manufacturing industry in New York to services industry in New York) to predict the probability of hiring a Republican or Democrat CEO. Instead, I compare the executive ideology in an industry in a state (e.g. manufacturing industry in New York) with itself over the different years in the sample period.

The second instrument is constructed as the pool of CEOs and executives at the time the CEO was hired. In this case, the variation in the pool is coming from the presence of different executives in the year in which the CEO was hired. For instance, suppose a firm hires a CEO in 1998 and then again in 2005. For years 1998 to 2004, the IV is going to be the ideology of the executives in the pool in the year 1998. In 2005, the IV would change to the value of the ideology of executives in the pool in the year 2005. If there are no subsequent changes in CEO, the value of the IV would remain unchanged for years 2005 onwards.

This second instrument, similar to the earlier one, constrains the firm's choice of CEO based on ideology. While it has less variation than the first instrument, it has some advantages. Firstly, if one were to assume that there is little turnover of CEOs, the pool at the time at which the CEO was hired may be more relevant than the contemporaneous pool. Secondly, as this instrument does not vary over all the years, potential presence of any omitted variable that may affect the pool as well as firm performance will not bias the results. This is because any such omitted variable at the time the CEO was hired should not be related to firm performance today. Lastly, it allows the inclusion of

three-way state-industry-year fixed effects which is not possible in the first instrument. Panel D of Table II reports descriptive statistics of all the instrumental variables and their correlations with the different measures of ideology.

In the first stage, the probability that the firm will hire a Republican CEO is estimated as a function of the ideology of the pool controlling for the CEO characteristics. In the second stage, the predicted values of probability of hiring a Republican CEO are used. The equations below illustrate the empirical methodology. The first stage is given by:

$$\begin{aligned} REP_{jist} &= \beta_0 + \beta_1 Pool\ REP_{ist} + \beta_2 Pool\ DEM_{ist} + E_{jist}^{REP}, \\ DEM_{jist} &= \beta_0 + \beta_1 Pool\ DEM_{ist} + \beta_2 Pool\ REP_{ist} + E_{jist}^{DEM}, \end{aligned} \tag{4}$$

The second stage of the instrumental variable estimation is given by the following equation:

$$ROA_{jist} = \beta_0 + \beta_1 REP_{jist} + \beta_2 DEM_{jist} + E_{jist} \tag{5}$$

where j represents the firm, belonging to industry i, located in the state s, at year t. $Pool\ REP_{ist}$ and $Pool\ DEM_{ist}$ is the ratio of Republican and Democrat executives in the same industry-state pair as the firm j, in the year t and REP_{jist} and DEM_{jist} are binary variables equal to one if the CEO ideology for firm, j, in year t, is Republican and Democrat respectively. The reference group is Equal-givers.

Here, the identification assumption is that the ideology of the pool of executives in the state-industry pair is exogenous with respect to the unobserved firm level characteristics, and that this pool only influences the firm performance through the ideology of the CEO. In other words, $E(E_{jist}|REP\ POOL_{ist}, DEM\ POOL_{ist}) = 0$.

As before, the differences in firm performance could be correlated with differences in the pool of potential CEOs due to several reasons. Hence, I control for year, state and industry fixed effects to account for any macroeconomic shocks common to all firms and time invariant state level and industry level factors. I further control for *industry-year* and *state-year* fixed effects to account for time varying factors that may affect certain industries or states in some years which may affect their performance (ROA), and, at the same time, affect the pool of executives. Finally, *state-industry* fixed effects account for differences among firms belonging to the same industry, but different states.

The error term in the equation 6 can be expressed in terms of the new error as: $E_{jist} =$

$\alpha_s + \alpha_i + \alpha_t + \alpha_{st} + \alpha_{it} + \alpha_{is} + v_{jist}$. The identification assumption for the instrument to be valid can now be expressed as: $E(v_{jist}|Pool\ REP_{ist}, Pool\ DEM_{ist}) = 0$. In other words, the firm unobserved characteristics that are correlated with the the firm performance are uncorrelated with the ideology of the pool of executives. Hence, I estimate the following in the second stage.

$$ROA_{jist} = \beta_0 + \beta_1 REP_{jist} + \beta_2 DEM_{jist} + \alpha_s + \alpha_i + \alpha_t + \alpha_{it} + \alpha_{st} + \alpha_{is} + v_{jist}, \qquad (6)$$

After controlling for all the single and two-way fixed effects, the identification assumption for the consistent estimation of the coefficients β_1 and β_2 is much more reasonable. However, time varying shocks specific to a certain industry and state may be driving the results. By definition, these shocks would be perfectly correlated with the instrument, as the instrument is constructed at the industry, state and year level. An example, of such a shock could be the changes in regulation of industries among states. That is, some states introduced more regulations, or relaxed some regulations on certain industries than the others. This is not going to affect the consistency of the coefficients β_1 and β_2 as long as these changes do not accompany changes in the pool of executives as well. Hence, my instrument will be inconsistent only if the firm performance of firms in industry-state pairs over years systematically varied with the ideology of the pool of the executives in the industry-state pair over time.

Even though I can not include the three way fixed effects in the estimation because the first instrument varies at the state-industry-year level, I address this issue by including a proxy, interaction of state GDP and industry GDP, for the profitability of the state-industry pair over the different years. This proxy captures the common time-varying shocks to the firms which belong to the same industry-state pair. This would address the potential issue of state-industry time-varying shocks driving the results.

Moreover, using the second instrument, constructed at the level of state-industry and the year the CEO was hired, alleviates these concerns as it allows inclusion of the three way state-industry-year fixed effects. The identification assumption after inclusion of the three way fixed effects is: $E(w_{jist}|Pool\ REP^{qlt}_{jist}, Pool\ DEM^{qlt}_{jist}) = 0$. In other words, the firm unobserved characteristics that are correlated with the the firm performance are uncorrelated with the ideology of the pool of executives after controlling for the state-industry-year fixed effects. This assumption is reasonable because with the inclusion of the three way fixed effects, I am essentially comparing the performance of the firms

within the same industry and state in the same year.

4 Results

4.1 OLS Results

Table III shows the results of the estimation. Column 1 contains estimates for the uni-variate analysis where ROA is regressed over the two ideologies; Republican and Democrat, with Equal-givers being the reference group. The standard errors are clustered at a firm level to allow for correlation among the observations from a firm across time[16]. The relation between ideology and firm performance suggest that firms with Republican CEOs tend to have better firm performance by 0.026 as compared to firms with CEOs who are non-ideological (Equal-givers). On the other hand, firms with Democrat CEOs do not seem to significantly differ from firms with non-ideological CEOs. Furthermore, firms with Republican CEOs tend to have higher return on assets (ROA) by 0.033 compared to firms with Democrat CEOs. This result is statistically significant at 1% significance level. The economic significance of these coefficients can be gauged by comparing them with the standard deviation of the dependent variable in the sample. The mean ROA of the firms in the sample is 0.128 with standard deviation 0.102. A coefficient of 0.033 suggests that the difference between the performance of firms with Republican CEOs and Democrat CEOs is about one third of the standard deviation of ROA.

In column 2, I control for CEO characteristics such as gender, age, tenure, experience and education.[17] If we compare the coefficients obtained in column 2 to the uni-variate results obtained in column 1, we can gauge the impact of omitted CEO characteristics. While the R^2 of the model has increased from 0.018 to 0.023, the coefficients on REP, DEM and the difference between the two remain almost unchanged. This suggests that CEO characteristics are not strong correlates of ideology.

I add year, state and industry fixed effects to the estimations in column 3, 4, and 5, respectively and column 6 shows the results after controlling for all three fixed effects simultaneously. As suggested by Figure 3 adding year fixed effects does not change the earlier results by much, however, adding state fixed effects reduces the coefficient on REP

[16] Results are robust to clustering at industry and state level as well.

[17] For the sake of brevity, I only report coefficients on variables of interest in the tables. I do not obtain statistically significant coefficients on any of the CEO characteristics except tenure, for which I obtain a positive and significant coefficient of 0.002.

slightly, suggesting that the firms with Republican CEOs, relative to Democrat, tend to be concentrated in high-profitability states. The difference is still statistically significant at 1% significance level and corresponds to 0.26 standard deviation of ROA. Adding industry fixed effects also results in a reduced difference between performance by the firms with Republican CEOs compared to Democrat CEOs and a slight reduction in the coefficient on REP, suggesting that the firms with Republican CEOs, relative to Democrat CEOs, tend to be concentrated in high-profitable industries.

In column 6, after controlling for all these effects simultaneously, we see that firms with Republican CEOs outperform firms with non-ideological CEOs by 0.011 (0.11 standard deviation of ROA) and firms with Democrat CEOs by 0.021 (0.21 standard deviation of ROA).

Column 7, 8, and 9 of Table III shows results of the estimation after controlling for two-way state-year, industry-year and state-industry fixed effects respectively. Increasing the number of fixed effects results in higher standard errors. In column 10, all fixed effects are controlled for simultaneously. The difference between the performance of firms with Republican CEOs compared to Democrat CEOs remains positive and statistically significant at 5% significance level. This effect of ideology (0.024) is equivalent to 0.24 standard deviation of ROA. The number of observations reduce significantly once three way fixed effects are accounted for in column 11. Even after controlling for time varying factors at a state-industry level, firms with Republican CEOs outperform firms with Democrat CEOs by0.029.

The results obtained in the previous subsection suggest that ideology matters. A consistently positive coefficient on REP and a positive difference of firm performance between Republican and Democrat highlight not only that ideology matters but also that a specific ideology may be more beneficial for firm performance than the other. Firms managed by Republican CEOs outperform firms with Democrat and non-ideological CEOs even after controlling for all single, two-way and three-way fixed effects.

4.2 Instrumental Variable Results

As long as the identification assumption holds, the results in the previous section can be interpreted as causal. However, as highlighted earlier, the identification assumption could be violated in the presence of selection at a state-industry level. For instance, if high

(low) performing firms systematically choose Republican (Democrat) CEO. Therefore, to address potential identification concerns, I use instrumental variables for the ideology of the CEO to constrain the choice of the firm when hiring a CEO with respect to ideology.

The results of IV estimations are presented in Table IV and Table V. As shown in Table IV, Panel A, the results in the first stage show a positive and highly significant coefficient on *Pool REP* for REP and *Pool DEM* for DEM. Moreover, the instruments yield a high F-statistic, showing the strength of the instruments.

In the second stage, presented in Table IV Panel B, consistent with the earlier results, we obtain positive and statistically significant coefficient on REP through all the specifications, whereas the coefficient on DEM remains statistically insignificant. Column 1 reports the unconditional relation i.e. without controlling for any fixed effects. The coefficient on REP is larger than the one obtained earlier.

Firms with Republican CEOs perform better by 0.06 as compared to firms with non-ideological CEOs as well as Democrat CEOs. This result is statistically significant at 1% significance level with an economic significance equivalent to 0.6 standard deviation of ROA. I add all year, state and industry fixed effects to the estimations in column 2. The coefficient on difference between the performance of firms managed by Republican and Democrat CEO decreases to 0.43. However, once I include all the single as well as two-way fixed effects simultaneously, the coefficient increases in magnitude closer to the one obtained in the unconditional estimates in the first column. Firms with Republican CEOs outperform firms with non-ideological CEOs by 0.042 (0.42 standard deviation of ROA) and firms with Democrat CEOs by 0.07 (0.7 standard deviation of ROA).

I can not include three-way fixed effects as the instrument is constructed at the state-industry-year level. However, I use the state and industry GDP from 1997 to 2013 from the Bureau of Economic Analysis (BEA) as a proxy for the profitability of the state-industry pair over the different years.[18] Results are presented in Table IV. As shown in panel B, column (4), even after including an interaction of state GDP and industry GDP to control for common time-varying shocks to the firms which belong to the same industry-state pair, firms with Republican CEOs outperform firms with non-ideological CEOs by 0.045 and firms with Democrat CEOs by 0.059 (0.59 standard deviation of ROA).

[18] BEA reports the 3-digit NAICS industry GDP data. As I am using 1 digit SIC industry classification, I match the industry title provided by BEA with the 1 digit classification SIC to get the corresponding GDP.

Table V present the first and the second stage result of IV estimation using second set of instrumental variables constructed at the level of state, industry and the year the CEO was hired. Panel A shows the first stage results. As before, we have a positive and highly significant coefficient on *P ool REP* for REP and *P ool DEM* for DEM. Moreover, the strength of the instruments is also evident by high F-statistics obtained in the first stages.

Table V Panel B shows the results from the second stage. Column (2-3) shows results with the inclusion of the single and two-way fixed effects. We get qualitatively similar findings to the one obtained before. Firms with Republican CEOs outperform firms with non-ideological as well as Democrat CEOs.

In column 4, I include the three way fixed effects. The inclusion of three way fixed effect does not come without a cost. While, the inclusion of three way fixed effects strengthens the argument for the validity of the instrument, it reduces the power to detect an existing effect for two main reasons. First, with the inclusion of three way fixed effects, there are more than 2500 fixed effects in the estimation. The total number of observations are less than 10,000. This implies, on average, 4 observations per industry-state-year pair. Such small number of observations in the industry-state-year bin reduces the power significantly. Second, the inclusion of three way fixed effects partials out around 80 percent of the variation in the instrument. This significantly reduces the amount of variation in the instrument.

The inclusion of three way fixed effects increases the coefficients of Democrat and Republican CEO. The coefficient on the difference between the Republican and Democrat CEO is 0.025. The coefficient implies that the firms run by Republican CEO have 0.025 higher ROA compared to the firms run by Democrat CEO in the same industry and state and in the same year. The magnitude of the coefficient in the last column is statistically indistinguishable from the one in column 3. The standard errors, however, are larger due to inclusion of the three way fixed effects.

The results are consistent across various different specifications and estimations. First, the OLS estimates yield a significant relation between CEO political ideology and the firm performance. IV estimation further suggests that the results are causal. That is, the difference in political ideology causes differences in firm performance. The finding remains consistent throughout i.e. firms with Republican CEOs outperform firms with Democrat as well as non-ideological CEOs. Moreover, the magnitude of this effect of ideology on firm performance is economically significant.

4.3 Ideology vs. Connections

There is vast literature on political connections which highlights the importance of political connectedness of firms on various firm level outcomes.[19] Thus, there may be a concern that an individual may be giving donations to the candidates in expectation of favors in the future when their candidate gets elected and is in position of power. If this is the case, the results may reflect the effect of ideology and connections. Specially, if firms with Republican CEOs have stronger connections, it would reflect in the estimates documented. However, this concern is countered by the use of individual contributions only, as the research on motivations behind donations clearly suggests that these individual donations reflect donor's ideology. Hence, the measure being used partially controls for this "quid pro quo" aspect of connections.

An additional concern could be that the managers may still be able to reap benefits from the fact that they contributed to the winning candidate, even if the motivation behind the donation was ideological and not opportunistic. They may still be in a position to request favors that the candidate may feel obliged to fulfill. This argument essentially rests on the assumption that just by the fact that the individual contributed, he has earned some network of connections. However, when comparing Republicans, Democrats and Equal givers, this concern is mitigated to a greater extent as all these groups are contributing.

However, a potential problem may arise if Republicans contribute greater amounts or more frequently, which may earn them stronger connections. Table I shows that the average contribution amounts of Republicans and Democrats are comparable.[20] The average number of times these groups contribute is also comparable.

Nonetheless, given that I seek to estimate the effect of political ideology, I explicitly control for political connections as well to ensure that the results are not driven by political connections. This is mainly to account for the concern that connections play an important role when the party that the CEO supported is in power. Controlling for the ruling party ensures that the effect of connections coming from the network established is accounted for. I control for the ruling party at a presidential level. *Rep rule pres* is a dummy taking the

[19] Political connectedness is associated with higher stock prices (Fisman, 2001; Faccio and Parsley, 2009; Ferguson and Voth, 2008; Jayachandran, 2006; Knight, 2006), ease of access to finance (Mian and Khwaja, 2004; Johnson and Mitton, 2003; Dinc, 2005; Faccio et al., 2006; Claessens et al., 2008; Boubakri et al., 2012; Houston et al., 2014), and other perks such as procurement of productive government contracts, tax redemption or regulatory benefits (Goldman et al., 2009; Correia, 2014)

[20] Republican CEOs contribute on average $34,087 to Republican candidates and party over all the years. Similarly, Democrat CEOs contribute on average $44,680 to Democrat candidates and party over all the years

value of one for the years in which there was a Republican president and zero otherwise.

However, it can be argued that the connections to the party in power may not matter at such a broad scale but rather at a state level as the benefits that firms expect may be taken at smaller level. Therefore, I control for the party affiliations of the senators as well as the governors at the state level. Senate is responsible for passing laws which include laws that directly affect the firms. Moreover, the senators oversee the federal bodies responsible for keeping check on institutions including firms. United States Senate has 100 senators, with two representatives per state. Therefore, which party represents the state in the Senate can be assessed by looking at the party affiliations of these two senators from that state. I hand collect the party affiliations of each of the individual in the U.S. Senate for the 50 states for years1992 to 2014. For each year and state, *Rep rule senate* is assigned a value of 1 if both the representatives of the state in the U.S. Senate were Republicans, 0.5 if one was Republican and the other a Democrat and 0 if both the senators were Democrats. I collect party affiliations of each of the governors as well. Similar to before, *Rep rule gov* for state s at year t indicates whether the governor of the state is Republican.

Table VI shows the results after controlling for connections at various levels. The proxy for connection at presidential level is completely absorbed once year fixed effects are added. Similarly, proxies for connections at state (senate and governor level) are subsumed in the state-year fixed effects. However, to further control for the potential difference in the value or strength of connections between the two ideological groups, I interact the proxies for connections with the dummy variable for CEO ideology and add as an instrument to the estimation.

In column 1, connections at a presidential level are controlled for. Once we add the interaction term, we get a number of possible combinations depending on the ideology of the ruling party in a given year. For instance, if the president in power belongs to the Democrat party then the dummy *Rep rule pres* will be zero and the coefficient on "REP-DEM" indicates the difference between the performance of firms with different ideological CEOs under Democrat rule. Similarly, "REP-DEM" in REP rule indicates the difference between firm performance based on CEO ideology when the president in power is Republican. I further present the coefficients for the difference in firm performances when firms are managed by REP CEOs when Republicans are in power and DEM CEOs when Democrats are in rule to highlight that the difference in the value of connections between Republicans and Democrats is not driving the results.

Columns 2 and 3 present similar analysis but controlling for connections at the governor and senate level respectively and column 4 presents results when controlling for potential connections at all three levels simultaneously.[21]

The results remain robust to the inclusion of these interaction terms. As before, we find a positive and significant coefficient on REP i.e. firms with Republican CEOs have higher ROA of 0.04 compared to equal-givers. Moreover, the difference in firm performance between the Republican and the Democrat CEOs remains positive and mostly significant regardless of which specific political party is in power. Note that the coefficients on REP-DEM in DEM rule are consistently positive and significant through all columns i.e. firms with Republicans CEOs perform better even when the party in rule is of opposite ideology (and hence, arguably not favorable in terms of connections). The results highlight the importance of ideology for firm performance even after controlling for possible value of connections at presidential as well as state level.

4.4 Measuring Ideology using DW-Nominate

Ideo is a categorical measure of CEO ideology, which may not capture the ideological variation within a similar ideological group. One may argue that two CEOs who donate all their money to Republicans, but one donates mostly to extreme conservative politicians, while other to moderate Republicans may be ideologically different from each other.

To understand within differences among Republican and Democrat CEOs, we need to capture the variation within the Republican and Democrat political party itself. One such measure is the ideal point estimation of each legislator known as the DW-Nominate, which was introduced by Poole and Rosenthal (1985).[22] The DW-Nominate is widely used in political science as a measure of the ideology of the legislators. The only study in finance utilizing similar methodology is Bolton et al. (2018), who argue that firms' policies are not entirely motivated by economic forces and inevitably have a political facet, by documenting that the ideological leanings of the institutional investors are depicted in their voting patterns.

[21] Note that when adding all three proxies for connections as interaction terms, we essentially have too many instruments in the equation i.e. we are predicting 8 instruments using variation coming from two variables only i.e. ***Pool REP*** and ***Pool DEM***. This would understandably lead to weak instrument problem and thus the F-value when all three proxies for connections are added as interaction terms drops below 10.

[22] DW-Nominate uses roll-call voting data of legislators in the Congress and the Senate to assign each politician on a continuous scale of liberal (-1) to conservative (1). The measure relies on two key assumptions. First, it assumes that the "Yea" and "Nay" can represent each legislation on a Euclidean space. Second, each legislator votes non-strategically to maximize his static utility function from each vote.

Following Mian et al. (2010) and Mian et al. (2014); Autor et al. (2016) I rely on the primary DW-Nominate dimension to measure the CEO ideology. [23] Specifically, I analyze the political contributions given by each CEO to different legislators and construct the measure as the weighted average of the DW-Nominate score of the legislators to whom the CEO contributes over her life-time. The following expression represents the measure for CEO i who contributes to legislators $j = 1, \cdots, J$:

$$DW\text{-}Nominate_i = \frac{\sum_{j=1}^{J} DW\text{-}Nominate_j * Amount_j}{\sum_{j=1}^{J} Amount_j}$$

To illustrate, suppose a CEO gives \$1,000 to a candidate with DW-Nominate of 0.90 and \$2,000 to a candidate with DW-Nominate of 0.60, the CEO's DW-Nominate will be 0.70. The measure highlights the differences within Republican and Democrat CEOs. For instance, CEO Carol L. Williams (execid 43364) who gave \$1,450 to Ron Paul (one of the most conservative politician with a DW-Nominate of 0.97) has a DW-Nominate score of 0.97 and is thus much more conservative compared to CEO Thomas M. Bolger (execid 16306) who gave \$1,825 to John McCain (moderate Republican with a DW-Nominate of 0.38) and thus, has a DW-Nominate score of 0.38.

Figure 7 plots the distribution of CEO ideology using the DW-Nominate score. The Republican CEOs ($PII = 1$) appear in red, while Democrat CEOs ($PII = -1$) are represented in blue. We see that there is almost no overlap in ideology between the Republican and Democrat CEOs. An average CEO has a DW-Nominate score of 0.056 and the dispersion of DW-Nominate is 0.165. The middle 50% of the CEOs have a DW-Nominate score between -0.021 and 0.135. The Republican CEOs have an average DW-Nominate score of 0.168, with middle 50% lying between 0.043 and 0.260. On the other hand, the Democrat CEOs have an average DW-Nominate score of -0.018, with middle 50% lying between -0.069 and -0.276.[24]

Table VII shows the impact of CEO ideology on the firm performance using DW-Nominate as a measure of ideology. Columns 1 to 3 are estimated using OLS. Column 1 shows the estimates without controlling for any fixed effects, while Columns 2 and 3 include all single and two-way state, industry and year fixed effects. We see that the CEO ideology is

[23] The DW-Nominate of the legislators traditionally is estimated on two dimensions, where the primary dimension captures the liberal-conservative ideology scale, while the second dimension captures the post Civil Rights realignment between the Southern and Northern Democrats. For this reason, most of the work in economics which uses DW-Nominate, utilizes only the primary dimension.

[24] The distribution of the DW-Nominate of the CEOs matches well with the DW-Nominate scores of the legislators. There

are very few extreme conservative and liberal CEOs as most of the legislators have a score between -0.318 (25th percentile) and 0.335 (75th percentile), with a mean score of 0.018 and a standard deviation of 0.37.

positively correlated with the firm performance. A more conservative CEO is associated with higher firm performance. Specifically, a one standard deviation increase in the CEO conservatism increases firm performance by 0.043 (0.158*0.027/0.0998) standard deviation. In other words, CEO with conservatism at the 75th percentile, relative to CEO at the 25th percentile, have a 0.038 (0.027*(0.123+0.017)/0.0998) standard deviation higher ROA. An average Republican CEO outperforms an average Democrat CEO by 0.05 standard deviation of ROA.

Columns 4 to 6 of Table VII are estimated using IV. Analogous to previous analysis, I instrument the CEO DW-Nominate score by the DW-Nominate score of the pool of executives available in that industry-state in a particular year. Column 4 shows the unconditional estimates, while Columns 5 and 6 include all single and two-way state, industry and year fixed effects. We see similar results using IV approach. A one standard deviation increase in the CEO conservatism increases the firm performance by 0.15 (0.158*0.095/0.0998) standard deviation. Similarly, CEO with conservatism at the 75th percentile outperform the CEOs at the 25th percentile by 0.13 (0.095*(0.123+0.017)/0.0998) standard deviation. An average Republican CEO outperforms an average Democrat CEO by 0.13 standard deviation of ROA.

Next, I allow for the effect of CEO conservatism on firm performance to vary depending on the level of conservatism. Based on their DW-Nominate score, I define the following four groups: Liberal Democrats, Moderate Democrats, Moderate Republicans, and Conservative Republicans.[25] I estimate a flexible relation by allowing for the impact of each of the categories to be different on the firm performance. The reference group is the Liberal Democrats.

As shown in Figure 8, all the other groups perform significantly better than the Liberal Democrats. The Moderate Republicans have the best firm performance: the Moderate Republicans outperform Liberal Democrats by 0.22 standard deviation of ROA. In addition, the Moderate Republican also outperform Moderate Democrats by 0.14 standard deviation (significant at 5% significance level) of ROA. The difference in firm performance between Moderate Republicans and Conservative Republicans is both economically and statistically insignificant (less than 0.09 standard deviation and insignificant at 10% significance level). We also see that the differences between Conservative Republicans and Moderate Democrats are insignificant as well (less than 0.06 standard deviation and insignificant at 10% significance level). Hence, the evidence suggests that Moderate Republicans are best for firm performance.

[25] CEOs with DW-Nominate below (above) median value among Democrat CEOs are categorized as Liberal (Moderate) Democrats and CEOs with DW-Nominate below (above) median value among Republican CEOs are categorized as Moderate (Conservative) Republicans.

5 Robustness Tests

I estimate the effect of ideology on firm performance using various alternate measures of ideology, alternate measures of performance, controlling for firm fixed effects and adding lagged controls interacted with time trend to check the robustness of the results.

5.1 Alternative Measures of Ideology

I check the robustness of the results using various alternate measures of ideology. First, I increase (decrease) the threshold to impose stricter (lenient) condition on being equal-giver. Hence, I categorize the CEO as equal-giver for index value between -0.25 and 0.25 (-0.75 and 0.75). Furthermore, I employ another specification where I define equal givers as those who give exactly equal amount to both the parties, to avoid any arbitrariness altogether i.e. *Ideo* = 0.[26] Lastly, similar to earlier studies, I also bunch together both equal and non-givers as equal-givers.

Table VIII, columns 1-4 show the results using varying measures of ideology. The measure of ideology used is indicated at the top of the column. The dependent variable is ROA. As before, CEO characteristics along with all single and two-way fixed effects are controlled for in all the estimations and robust standard errors are reported in parenthesis. Regardless of the measure used, the difference between the performance of firms with Republican CEOs as compared to firms with Democrat CEOs remains positive and statistically significant. The stricter the cutoffs i.e. 0.25 and exact 0, the higher the difference in the firm performance between the two ideological groups i.e. 0.075 (i.e. 75% of the standard deviation) and 0.09 (i.e. 90% of the standard deviation) respectively.

I use a continuous measure as well to check if the effect obtained earlier exists with the continuous measure as well. Table IX reports the first stage as well as second stage results with a continuous measure of ideology. The results in the first stage show a positive and highly significant coefficient on *Pool Ideo*. Moreover, the instruments are strong as suggested by high F-statistics. Second stage results show that more Republican the CEO, higher the firm ROA. 1 unit increase in PII increases firm ROA by around 0.04 (i.e. 40% of the standard deviation). A movement from a Republican (PII=1) to a Democrat (PII=-1) reflects a 2 unit change in PII. Therefore, the results indicate that a strict Republican CEO causes 0.08 units increase in the ROA compared to a strict Democrat CEO.

[26] I do not limit the sample to those who only give in more than one election cycle here as the number of individuals who give exactly equal to both and have given in more than one election cycle is very low

5.2 Alternative Measures of Performance

I use three alternate measures of accounting firm performance: return on equity (ROE), return on sales (ROS) and earnings per share (EPS).[27] Table X reports the results. Consistent with the earlier results, I obtain positive and statistically significant difference between performance of firms with Republican CEOs as compared to firms with Democrat CEOs for all three alternate measures. Thus the coefficients on REP-DEM correspond to about 53% of the standard deviation of ROE, 60% of the standard deviation of ROS and 56% of the standard deviation of EPS. These results are quantitatively similar to those obtained earlier and are economically sizable.

5.3 Controlling for Firm Fixed Effects

I do not include firm fixed effects in my main analysis because, if I employ fixed effects, I would only be using within firm variation, which would essentially mean that my estimate of effect of ideology on firm performance only uses the firms in which there is an ideology change. The number of firms in which the CEO changes during the sample period and the new CEO is of a different ideology than the old one i.e. ideology changes at the CEO level is very small.[28] Most of my sample does not have within firm variation in political ideology. The small number of firms with ideology changes substantially reduces the power of the estimations to detect an effect of political ideology on the firm value. However, the results are robust to the inclusion of firm fixed effects as well. Table XI presents the results.

5.4 Controlling Lagged Firm Characteristics

I do not control for firm characteristics in my main analysis as CEO ideology may affect firm performance via various firms characteristics and adding controls may undermine the total effect of ideology on firm performance. In this section, I control for firm characteristics at the time the CEO was hired (lagged controls). The reasoning being that the CEO inherits those firm characteristics, and therefore, including them at the time CEO was hired would not capture the effect of that CEO's ideology. However, firm characteristics do not stay stagnant from one year to another either. Therefore, simply including, for instance, leverage computed at the time the CEO was hired may not be ideal. To account for this, similar to Frydman and Hilt (2017), I interact these characteristics at the time the

[27] Following Cooper et al. (2010), I define ROE as the ratio of income before extraordinary items scaled by total common equity. ROS is calculated as net income over total sale and EPS is taken as reported in Compustat.

[28] I only have 45 firms in which CEOs change from REP to DEM or vice versa

CEO was hired with a linear time trend. This addresses the potential problem that the firms with different CEO ideologies are systematically different from each other. Results are presented in Table XII. Firms managed by Republicans CEOs continue to outperform firms managed by Democrat CEOs by 0.056 even after including the time trends for all the lagged firm characteristics simultaneously (column7).

6 Competing Mechanisms

The focus of this paper has been to consistently estimate the total effect of CEO ideology on firm performance. Using instrumental variables, I show that firm with Republican CEOs outperform firms managed by Democrats, and that the results are robust across various alternate specifications and alternate measures of ideology. As discussed earlier, some of the systematic differences in the policy choices of the Democrat and Republican managers have already been identified in the literature. In this section, I carry out further analysis to rule out some of the possible mechanisms to show that the effect of CEO ideology on firm performance goes beyond the firm policies already examined in the literature. Moreover, I explore potential competing mechanism for the results obtained.

6.1 Risk-Return

It is possible that the results obtained are indicative of the tradeoff between risk and return. That is, Republicans tend to take higher risk, consequently increasing the return on assets of a firm.[29] I explore this possibility by constructing three different proxies for firm risk. Standard deviation of the ROA at the firm-CEO level, volatility of stock returns for each firm in each year and yearly betas using single factor model. Results are reported in Table XIV. Column 1 shows the effect of CEO ideology on firm risk, measured as the standard deviation of ROA.[30] I find no statistically significant difference in the risk level of the firm based on CEO ideologies. Columns 2 and 3 show there is no significant difference between the levels of volatility of returns of firms managed by CEOs of different ideologies. Lastly, we do not see any association between the ideology of the CEO and systematic risk of the firm either, as shown by the results in columns 4 and 5.

[29] Even though this hypothesis seems implausible as the literature has documented the opposite association i.e. Republicans managers tend to be more risk averse and are associated with less risky investments (Hutton et al., 2014)

[30] As this measure is at firm-CEO level, I cannot control for year fixed effects or any two- or three-way fixed effects containing year fixed effects. I do control for state, industry, and state-industry fixed effects though.

The results seem consistent with the previous finding that Republicans tend to take less risky decisions which reflect in lower (though statistically insignificant) volatility of ROA and stock returns. The conclusion remains consistent even after controlling for three-way state-industry-year fixed effects as well as different proxies of risk. These results suggest that the risk-return argument cannot explain the observed abnormal positive performance under the Republican CEOs compared to under Democrat CEOs.

6.2 Specific Firm Policies

Some of the specific policies shown to be associated with CEO ideology include corporate debt (leverage), investment in tangible capital and investment in research and development. I include these variables as controls to see how much of the total effect of ideology is explained by these specific policy choices.Variable definitions are given in the Appendix. Table XIII presents the results. The difference between performances of firms managed by Republicans and Democrats remains significantly positive as before even after including all controls simultaneously as shown in column 7. This highlights that the effect of ideology of the CEO on firm performance can certainly not be reduced to few policy measures.

7 Discussion and Conclusion

The results obtained show not only that ideology matters but also that a specific ideology is more beneficial for firm performance than the other. I get a consistently positive difference in performance between firms managed by Republican CEOs compared to the ones managed by Democrat CEOs even after accounting for time-invariant state level, industry level, and time-varying state, industry and state-industry factors. Using IV estimations give similar results and suggest that these results are causal. Firms managed by Republican CEOs, on average, have 0.06 (0.6 standard deviation) higher ROA compared to firms under Democrat CEOs. The results are robust to various alternate measures of ideology and performance.

Do Republicans really increase shareholder wealth? If Republicans are clearly more beneficial for shareholders than Democrats, why do firms hire Democrats at all? One would expect that these differences shouldn't persist because once the firms realize the importance of ideology and the benefits of hiring a Republican CEO for the overall firm performance, they would discount this fact and, eventually, the effect of ideology would fade away.

The results highlight that, *on average*, Republican CEOs are better for firms. However, while on average, firms with Republican CEOs perform better than firms with Democrat CEOs, it is possible that depending on specific firm characteristics, for a certain subset of firms, it may be that Democrat CEOs are more beneficial than Republican CEOs or are preferred in a specific point in time. One possible scenario could be if a firm is facing (or has recently faced) litigation pertaining to environmental damage and needs to build its reputation as a socially responsible firm now, it may be beneficial for this specific firm to hire a Democrat CEO to assuage the concerns of the shareholders.

Moreover, one possible explanation for the persistence of the results obtained could be that the firms have not yet realized the crucial role that ideology plays and hence they are not selecting CEOs based on ideology. The criteria on which to choose a CEO may be composed of a bunch of characteristics e.g. qualifications, credentials, reputation, experience to name a few. Is political ideology one of these criterion on which firms base their decisions to hire a CEO? Furthermore, is it important enough in this list of criteria that a firm would ignore an otherwise suitable candidate over his political ideology?

There is also a possibility of the presence of market frictions in CEO hiring not well explored in the literature yet. For example, the board of directors may have certain preferences of ideology which dictate their CEO hiring decisions. If directors exhibit "homophily" i.e. the tendency of individuals to associate with people similar to oneself (McPherson et al., 2001; Kossinets and Watts, 2009), we may expect Democrats directors to prefer Democrat CEOs and vice versa which may explain the persistence of the obtained results. In a recent study, Marks et al. (2018) carry out an experiment to show how people sought and then followed the advice of those who shared their political opinions on issues that had nothing to do with politics, even when they had all the information they needed to understand that this was a bad strategy. Not only the directors, but the shareholders themselves may have ideological leanings that may reflect in their preference for CEOs with a specific ideology. Bolton et al. (2018), in a recent study, provide evidence that institutional investors have ideological preferences which are reflected in their voting patterns. Hence, firms' policies are not entirely motivated by economic forces and inevitably have a political facet.

There is not enough research on this topic to be able to claim with certainty whether firms are or aren't incorporating individual ideology as a selection criterion. However, by highlighting the significance of CEO ideology for firm performance, this study opens up room for further discussion on the possible scenarios resulting in the persistence of these results. Each of these scenarios warrants a separate study of its own, thus providing

possible avenues for future research.

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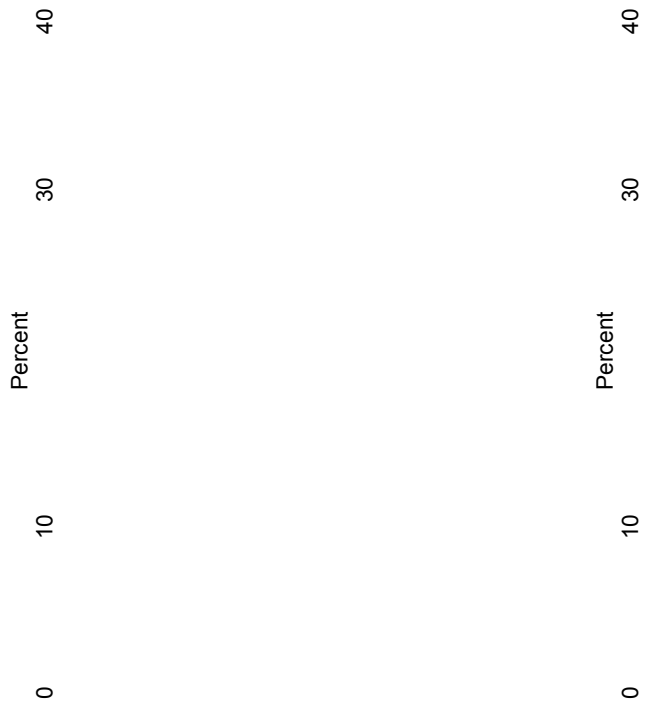

Figure 1: Distribution of CEO Ideology

Figure1: This figure shows the distribution of the variable political ideology index (PII) for the CEOs and the top executives, who contributed in more than one election cycle.

Figure 2: Unconditional correlation between CEO ideology and ROA

Figure2: This figure shows the scatterplot of firm performance (ROA) against CEO ideology. A continuous measure of CEO ideology i.e. PII is used to construct the scatterplot, which is divided in 100 equal-sized bins so that the figure shows the average ROA within each bin, along with the linear fit using OLS.

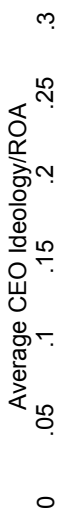

Figure 3: Variation in CEO Ideology and ROA over time

Figure3: This figure shows the time-series of the variables REP, DEM and ROA. The figure plots the average proportion of Republican CEOs (REP), average proportion of Democrat CEOs (DEM), and average firm performance (ROA) for years 1992 to 2013.

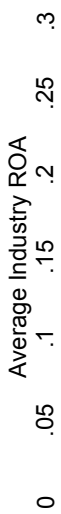

Figure 4: Average CEO Ideology and ROA by Industry

Figure4: This figure shows the binned scatterplot (equal-sized bins of 0.05) of average firm performance against average CEO ideology, as measured by proportion of Republicans (REP) in each 2-digit SIC, along with the linear fit using OLS.

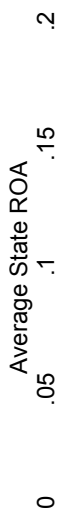

Figure 5: Average CEO Ideology and ROA by State

Figure5: This figure shows the the binned scatterplot (equal-sized bins of 0.05) of average firm performance in each state against average ideology of CEOs, as measured by proportion of Republicans (REP), along with the linear fit using OLS.

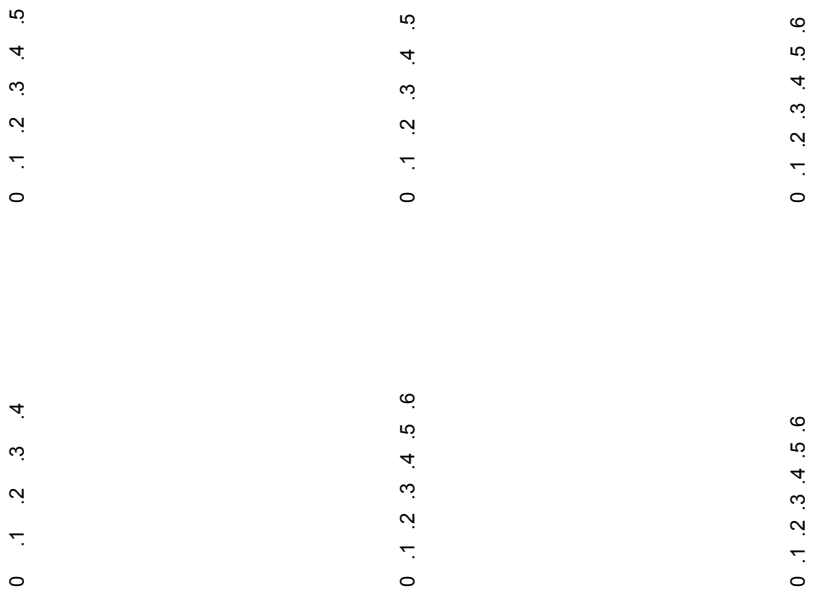

Figure 6: Variation in the Instrument

Figure6: This figure illustrates the source of variation in the instrument using example of two 2-digit SIC industries (manufacturing and services) and three states (California, New York and Texas). Each figure plots the time-series of the proportion of executives who are Republican (Pool REP) and Democrat (Pool DEM) for each state-industry pair.

Figure 7: Distribution of CEO Ideology using DW-Nominate

Figure7: The figure shows the distribution of political ideology of CEOs constructed as the weighted average of the DW-Nominate score of the legislators to whom the CEOs contribute over their life-time The red bars represent the distribution of ideology of Republican CEOs and blue bars represent the distribution of ideology of Democrat CEOs.

Figure 8: Distribution of CEO Ideology using DW-Nominate

Figure8: This figure plots the effect of CEO ideology on firm performance for the four groups categorized based on the level of conservatism. The four groups are: Liberal Democrats (DW-Nominate below median value among Democrat CEOs), Moderate Democrats (DW-Nominate above median value among Democrat CEOs), Moderate Republicans (DW-Nominate below median value among Republican CEOs), and Conservative Republicans (DW-Nominate above median value among Republican CEOs). The dots represents the estimated effect and the vertical red bars represent the 90% confidence interval.

Table I: Political Contributions- Summary Statistics

This table shows the numbers of CEOs falling in each category according to the different measures as well as the mean giving by CEOs of each category to their respective parties. "Mean $ amount given to" is the average dollar contribution by respective CEOs over their lifetime to different party candidates or committee. "Mean # of time given to" is the average number of times respective CEOs contribute to different party candidates or committee over their lifetime. PII is the measure used in the literature, which uses all observations for CEOs who have contributed at least once, and which assigns a value of zero both to non-givers and equal-givers. ***Ideo*** is the categorical measure used for the analysis in this paper, which uses only the observation for CEOs who have contributed in more than one election cycle. It characterizes CEOs as Republican (REP) if they contribute only to Republican candidates or party over the entire sample, Democrat (DEM) if they contribute only to Democratic candidates or party over the entire sample, and Equal-givers (EQUAL) if they contribute to both parties in equal amounts over the sample period. The Index value is indicated in the first column for further clarification.

		Index Value	# of CEOs	Mean $ amount given to		Mean # of time given to	
				Republican	**Democrat**	**Republican**	**Democrat**
PII	**REP**	(0,1]	3245	45,998	4,369	17.34	3.46
	DEM	[-1,0)	1291	6,773	46,883	5.40	18.74
	Equal/No-giver	0	2346	22	22	0.04	0.03
Ideo	**REP**	1	1042	34,087	-	13.48	-
	DEM	-1	264	-	44,680	-	12.34
	EQUAL	(-0.5,0.5)	912	21,816	19,236	13.63	12.79

Table II: Descriptive Statistics

The table reports the descriptive statistics of the variables used. Number of observations, mean, standard deviation, the minimum, median and maximum value of the variables are provided. Moreover, the correlations of the variables with the different measures of ideology are also presented. Panel A contains the descriptive statistics of all the political measures. Panels B and C report the summary statistics for CEO and firm characteristics respectively. Panel D reports descriptive statistics of the main instrumental variables used. Lastly, Panel E reports the statistics on different variables used for robustness checks and the measures of political connections. Definition of all the variables are provided in the appendix. Coefficients marked with *, **, and *** are significant at the 10%, 5%, 1% level, respectively.

	Descriptive Statistics						Correlations		
Variable	N	Mean	SD.	Min.	Median	Max.	PII	REP	DEM	EQUAL
Panel A: Political Measures										
PII	29091	0.29	0.63	-1	0.26	1	1	0.86***	-0.73***	-0.40***
REP	12166	0.47	0.50	0	0	1		1	-0.37***	-0.78***
DEM	12166	0.11	0.32	0	0	1			1	-0.29***
EQUAL	12166	0.42	0.49	0	0	1				1
DW Nominate	12166	0.06	0.17	-0.68	0.04	0.93	0.67***	0.56***	-0.51***	-0.24***
Panel B: CEO Characteristics										
CEO age	11623	55.83	7.31	31	56	88	0.07***	0.05***	-0.06***	-0.02
Male	12166	0.98	0.13	0	1	1	0.13***	0.05	-0.19***	0.07***
Tenure	12166	8.82	5.23	0	8	22	-0.02	-0.01	-0.02	0.02
Experience	12166	3.80	3.65	0	3	21	-0.02	0.03	-0.02	-0.02
Education	12166	2.46	1.08	1	2	5	-0.06***	-0.08***	-0.01	0.08***
Panel C: Firm Characteristics										
ROA	12166	0.13	0.10	-0.42	0.13	0.43	0.10***	0.12***	-0.04***	-0.10***
ROE	12164	0.10	0.36	-2.16	0.12	1.81	0.06***	0.04	-0.06***	0.00
ROS	11294	0.04	0.16	-1.09	0.05	0.35	0.05	0.02	-0.05	0.01
EPS	11294	1.36	2.23	-7.90	1.31	8.52	0.05**	0.03	-0.05	0.01
TFP	4891	1.02	0.34	0.02	1.00	15.48	-0.03	-0.01	0.05	-0.03
Sales	5863	3090	4957	40	1399	32084	0.01	-0.02	-0.04	0.05
Firm Size	12166	7.63	1.72	0.05	7.52	12.06	-0.02***	-0.09***	-0.08***	0.15***
Leverage	12118	0.24	0.19	0.05	0.22	0.94	-0.07***	-0.10***	0.03	0.11***
R&D	12166	0.02	0.05	0.05	0	0.28	-0.02	0.03***	0.07***	-0.07***

continued

	Descriptive Statistics						Correlations		
Variable	N	Mean	SD.	Min.	Median	Max.	PII	REP	DEM	EQUAL
Panel D: Instrumental Variables										
Pool REP	12010	0.44	0.22	0.05	0.43	1	0.44***	0.47***	-0.22***	-0.34***
Pool DEM	12010	0.15	0.13	0.05	0.13	1	-0.39***	-0.28***	0.38***	0.03
Pool EQUAL	12010	0.42	0.18	0.05	0.42	1	-0.24***	-0.37***	-0.02	0.40***
Alt Pool REP	12010	0.45	0.21	0.05	0.44	1	0.43***	0.46***	-0.23***	-0.32***
Alt Pool DEM	12010	0.14	0.12	0.05	0.12	1	-0.39***	-0.29***	0.37***	0.05
Alt Pool EQUAL	12010	0.41	0.17	0.05	0.41	1	-0.26***	-0.37***	0.01***	0.37
Pool PII	12010	0.14	0.13	-0.52	0.13	0.72	0.37***	0.32***	-0.26***	-0.15***
Pool DW Nominate	12165	0.05	0.08	-0.29	0.05	0.54	0.35***	0.30***	-0.22***	-0.16***
Panel E: Other Variables										
REP Rule Pres	12166	0.40	0.49	0.05	0	1	-0.02	0.00	0.04	-0.03
Rep Rule Sentate	11971	0.42	0.42	0.05	0.5	1	0.19***	0.14***	-0.16***	-0.03***
REP Rule Gov	11924	0.60	0.49	0.05	1	1	0.06***	0.05***	-0.04	-0.02***
State GDP	9735	0.64	0.52	0.02	0.42	2.05	-0.08***	-0.04***	0.05***	-0.01
Industry GDP	9892	1.27	0.64	0.09	1.01	3.38	-0.08***	-0.08***	0.04***	0.07***

Table III: Does Ideology Matter - OLS Estimation

This table reports the estimated relation between the firm performance and CEO ideology using OLS estimation. The sample covers the period 1994-2013. Dependent variable is ROA and the main independent variables are dummies for Republican and Democrat CEO. CEO characteristics (gender, age, tenure in the firm, experience and education) are controlled for in all specifications. Standard errors, clustered at firm level, are reported in the parenthesis. Coefficients marked with *,** and *** are significant at 10%, 5%, 1% level respectively.

	Dependent Variable: ROA										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
DEM	-0.007	-0.012	-0.011	-0.005	-0.014*	-0.010	-0.010	-0.013	-0.006	-0.013	-0.008
	(0.009)	(0.009)	(0.009)	(0.009)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.012)	(0.015)
REP	0.026***	0.024***	0.024***	0.021***	0.013***	0.011***	0.011**	0.012**	0.011**	0.011	0.021**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.007)	(0.010)
REP-DEM	0.033***	0.036***	0.035***	0.026***	0.026***	0.021***	0.021***	0.024***	0.017**	0.024**	0.029*
	(0.009)	(0.009)	(0.009)	(0.009)	(0.007)	(0.007)	(0.008)	(0.009)	(0.009)	(0.011)	(0.015)
Observations	12166	11,623	11,623	11,470	11,623	11,470	11,305	9,174	11,379	8,831	2,744
R-squared	0.018	0.023	0.033	0.062	0.355	0.380	0.411	0.542	0.576	0.743	0.639
CEO Characteristics	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	NO	NO	YES	NO	NO	YES	-	-	YES	-	-
State FE	NO	NO	NO	YES	NO	YES	-	YES	-	-	-
Industry FE	NO	NO	NO	NO	YES	YES	YES	-	-	-	-
StatexYear	NO	NO	NO	NO	NO	NO	YES	NO	NO	YES	-
IndustryxYear	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	-
IndustryxState	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	-
StatexIndustryxYear	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

Table IV: Does Ideology Matter - Instrumental Variable Estimation

This table reports instrumental variable regression estimation results. The endogenous variables are REP and DEM. The instrumental variables are Pool REP for REP and Pool DEM for DEM constructed at state-industry level. The first-stage regression results are reported in Panel A and second-stage regression results are reported in Panel B. The sample covers the period 1994 to 2013. CEO characteristics (gender, age, tenure in the firm, experience and education) are controlled for in all specifications. Definitions of all variables are provided in the Appendix. Standard errors, clustered at firm level, are reported in the parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

Panel A: First Stage Results

	(1)		(2)		(3)		(4)	
	DEM	REP	DEM	REP	DEM	REP	DEM	REP
Pool DEM	0.860***	0.045	0.776***	0.085**	0.566***	0.059	0.497***	0.090
	(0.028)	(0.032)	(0.030)	(0.036)	(0.046)	(0.060)	(0.052)	(0.066)
Pool REP	0.014	1.055***	0.058***	0.960***	0.031	0.687***	0.043	0.628***
	(0.012)	(0.017)	(0.015)	(0.022)	(0.025)	(0.041)	(0.029)	(0.047)
Year FE	NO		YES		-		-	
State FE	NO		YES		-		-	
Industry FE	NO		YES		-		-	
StatexYear	NO		NO		YES		YES	
IndustryxYear	NO		NO		YES		YES	
IndustryxState	NO		NO		YES		YES	
IndGDPxStateGDP	NO		NO		NO		YES	

continued

Table IV: Continued

Panel B: Second Stage Results

Dependent Variable: ROA

	(1)	(2)	(3)	(4)
DEM	0.002	-0.007	-0.027	-0.013
	(0.010)	(0.011)	(0.023)	(0.029)
REP	0.060***	0.034***	0.042***	0.045***
	(0.005)	(0.006)	(0.012)	(0.015)
REP - DEM	0.060***	0.042***	0.070***	0.059*
	(0.008)	(0.011)	(0.024)	(0.033)
Observations	11,470	11,470	11,300	9,263
Year FE	NO	YES	-	-
State FE	NO	YES	-	-
Industry FE	NO	YES	-	-
StatexYear	NO	NO	YES	YES
IndustryxYear	NO	NO	YES	YES
IndustryxState	NO	NO	YES	YES
IndGDPxStateGDP	NO	NO	NO	YES
F-value-rk	646.8	335.1	77.07	46.16
Craig-Donald F-value	633.4	396.1	74.66	41.5
Underidentification	554.2	370.9	159.2	99.07

Table V: Alternate Instrumental Variable

This table reports IV estimation results using alternate IV. The endogenous variables are REP and DEM. The instruments are constructed at level of industry and state and at the the year in which the CEO was hired. The first-stage regression results are reported in Panel A for all the different empirical specification used. The second-stage regression results are reported in Panel B. The sample covers the period 1994 to 2013. CEO characteristics (gender, age, tenure in the firm, experience and education) are controlled for in all specifications. Definitions of all variables are provided in the Appendix. Robust standard errors are reported in parentheses. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

Panel A: First Stage Results

	(1)		(2)		(3)		(4)	
	DEM	REP	DEM	REP	DEM	REP	DEM	REP
Pool DEM alt	0.943***	0.017	0.871***	0.013	0.791***	0.022	0.788***	-0.288**
	(0.031)	(0.037)	(0.033)	(0.043)	(0.056)	(0.074)	(0.084)	(0.113)
Pool REP alt	0.012	1.059***	0.069***	0.960***	0.023	0.785***	0.058	0.456***
	(0.012)	(0.018)	(0.016)	(0.023)	(0.030)	(0.046)	(0.050)	(0.077)
Year FE	NO		YES		-		-	
State FE	NO		YES		-		-	
Industry FE	NO		YES		-		-	
StatexYear	NO		NO		YES		-	
IndustryxYear	NO		NO		YES		-	
IndustryxState	NO		NO		YES		-	
StatexIndustryxYear	NO		NO		NO		YES	

continued

Table V: Continued

Panel B: Second Stage Results

Dependent Variable: ROA

	(1)	(2)	(3)	(4)
DEM	0.007	0.001	0.011	0.080**
	(0.010)	(0.011)	(0.019)	(0.035)
REP	0.064***	0.034***	0.063***	0.102***
	(0.005)	(0.006)	(0.013)	(0.031)
REP - DEM	0.057***	0.034***	0.052**	0.025
	(0.008)	(0.012)	(0.02)	(0.031)
Observations	11,470	11,470	11,300	9,691
Year FE	NO	YES	-	-
State FE	NO	YES	-	-
Industry FE	NO	YES	-	-
StatexYear	NO	NO	YES	-
IndustryxYear	NO	NO	YES	-
IndustryxState	NO	NO	YES	-
StatexIndustryxYear	NO	NO	NO	YES
F-value-rk	615.1	336.9	110.8	23.94
Craig-Donald F-value	591.3	393.7	121.1	20.08
Underidentification	587.2	417.2	206.6	57.44

Table VI: Controlling for Connections

This table reports the second-stage regression results of IV estimation after controlling for possible political connections at presidential, governor and senate level. Each proxy for connection is interacted with the dummy variable for CEO ideology and added as an instrument to the estimation to capture the potential difference in the value of connections. CEO characteristics are controlled for in all estimations. Robust standard errors are reported in parentheses. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

Dependent Variable: ROA

	(1)	(2)	(3)	(4)
DEM	-0.036	-0.029	-0.064**	-0.087**
	(0.023)	(0.033)	(0.026)	(0.041)
REP	0.041***	0.043***	0.048***	0.048***
	(0.013)	(0.013)	(0.017)	(0.018)
REP - DEM in DEM rule	0.077***	0.072**	0.112***	0.135***
	(0.025)	(0.034)	(0.028)	(0.025)
REP-DEM in REP rule	0.063*	0.073**	-0.025	0.102**
	(0.033)	(0.032)	(0.047)	(0.042)
REP in REP rule-DEM in DEM rule	0.087***	0.117	0.101***	0.144***
	(0.027)	(0.389)	(0.029)	(0.047)
REP in DEM rule-DEM in REP rule	0.054*	0.029	-0.014	0.093**
	(0.033)	(0.351)	(0.049)	(0.041)
Observations	11,300	11,222	11,266	11,222
StatexYear	YES	YES	YES	YES
IndustryxYear	YES	YES	YES	YES
IndustryxState	YES	YES	YES	YES
Connection	PRES	GOV	SENATE	ALL 3

Table VII: DW-Nominate and Firm Performance

The table reports the estimated relation between ROA and CEO ideology measured using DW-Nominate. OLS estimation results are reported in column 1, 2 and 3 and the second stage results of the instrumental variable estimation in column 4, 5 and 6. CEO characteristics are controlled for in all specifications. Definitions of all variables are provided in the Appendix. Robust standard errors are reported in parentheses. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

	Dependent Variable: ROA					
	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
DW Nominate	0.057***	0.025**	0.027*	0.131***	0.093***	0.095***
	(0.013)	(0.012)	(0.016)	(0.013)	(0.020)	(0.035)
Observations	11,623	11,470	8,931	11,623	11,470	11,300
R-squared	0.013	0.378	0.632	-0.003	0.162	0.312
Year FE	NO	YES	-	NO	YES	-
State FE	NO	YES	-	NO	YES	-
Industry FE	NO	YES	-	NO	YES	-
StatexYear	NO	NO	YES	NO	NO	YES
IndustryxYear	NO	NO	YES	NO	NO	YES
IndustryxState	NO	NO	YES	NO	NO	YES

Table VIII: Alternate Measures of Ideology

This table reports the second-stage results of IV estimation with alternate measures of ideology. The measure of ideology used is indicated at the top of the column. The dependent variable is ROA. All single and two-way fixed effects are controlled for along with CEO characteristics and robust standard errors are reported in parenthesis. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

	Dependent Variable: ROA			
	1, -1, 0.25	1, -1, 0.75	1, -1, 0	1, -1, 0 (inc NG)
	(1)	(2)	(3)	(4)
DEM	-0.001	-0.018	-0.035	-0.017
	(0.026)	(0.025)	(0.050)	(0.028)
REP	0.074***	0.043***	0.058	0.047***
	(0.020)	(0.014)	(0.058)	(0.014)
REP - DEM	0.075***	0.061**	0.093***	0.065**
	(0.023)	(0.026)	(0.024)	(0.028)
Observations	8,634	14,637	11,076	19,848
State x Year	YES	YES	YES	YES
Industry x Year	YES	YES	YES	YES
Industry x State	YES	YES	YES	YES
F-value-rk	70.03	68.68	16.69	72.51
Craig-Donald F-value	54.20	74.81	15.50	73.13
Underidentification	135.9	154.4	35.95	154.0

Table IX: Continuous Measure

This table reports the results from IV estimation when using continuous political ideology index. The instrumental variable is continuous measure of ideology of the pool. The first-stage regression results are reported in Panel A and the second-stage second-stage regression results are reported in Panel B. The sample covers the period 1994 to 2013. CEO characteristics are controlled for in all specifications. Robust standard errors are reported in parentheses. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
	Panel A: First Stage Results Continuous Ideology Index (PII)			
Pool Ideo	0.998*** (0.017)	0.783*** (0.024)	0.563*** (0.045)	0.485*** (0.052)
	Panel B: Second Stage Results Dependent Variable: ROA			
PII	0.037*** (0.003)	0.033*** (0.005)	0.044*** (0.011)	0.041*** (0.016)
Observations	11,470	11,470	11,300	9,263
StatexYear	NO	NO	YES	YES
IndustryxYear	NO	NO	YES	YES
IndustryxState	NO	NO	YES	YES
IndGDPxStateGDP				YES
F-value-rk	3558	1048	155.4	86.18
Craig-Donald F-value	2744	820.8	128.1	69.15
Underidentification	1671	682.7	164.0	91.83

Table X: Alternate Measures of Performance

This table provides the second stage results of the instrumental variable estimation using alternate measures of firm performance as dependent variables. Dependent variable in column1 is return on equity (ROE) measured as the ratio of income before extraordinary items scaled by total common equity as in Cooper et al. (2010). Dependent variable in column 2 is return on sales (ROS) calculated as net income over total sale and dependent variable in column 3 is earnings per share (EPS) as reported in Compustat. As before, CEO characteristics (gender, age and tenure in the firm) is controlled for in all specifications. Robust standard errors are reported in parentheses. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)
	ROE	ROS	EPS
DEM	-0.147*	-0.085**	-1.019*
	(0.084)	(0.038)	(0.563)
REP	0.012	0.034	0.317
	(0.042)	(0.021)	(0.339)
REP - DEM	0.159*	0.119**	1.336**
	(0.090)	(0.042)	(0.627)
Observations	11,605	10,614	10,549
StatexYear	YES	YES	YES
IndustryxYear	YES	YES	YES
IndustryxState	YES	YES	YES
F-value-rk	74.91	62.82	70.37
Craig-Donald F-value	71.66	60.12	67.96
Underidentification	156.1	132.3	147.4

Table XI: Controlling Firm Fixed Effects

This table reports the OLS estimation results in column 1 and 2 and the second stage results of the instrumental variable estimation in column 3 and 4. Firm fixed effects are included in the estimations along with single and two-way state, industry and year fixed effects. CEO characteristics are controlled for in all specifications. Definitions of all variables are provided in the Appendix. Robust standard errors are reported in parentheses. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

	Dependent Variable: ROA			
	OLS		IV	
	(1)	(2)	(3)	(4)
DEM	-0.008	-0.010	-0.050	-0.127**
	(0.006)	(0.007)	(0.039)	(0.064)
REP	0.001	0.001	0.042**	0.001
	(0.003)	(0.003)	(0.018)	(0.025)
REP - DEM	0.010*	0.011*	0.093***	0.128***
	(0.006)	(0.006)	(0.035)	(0.051)
Observations	10,578	10,287	10,448	10,287
Firm FE	YES	YES	YES	YES
StatexYear	NO	YES	NO	YES
IndustryxYear	NO	YES	NO	YES
IndustryxState	NO	YES	NO	YES
F-value-rk			32.67	21.32
Craig-Donald F-value			78.03	31.84
Underidentification			67.19	52.16

Table XII: Controlling Lagged Firm Characteristics (Linear Trend)

This table reports second stage instrumental variable regression estimation results. The dependent variable is ROA. Through columns 1-6, I add different firm characteristics to the baseline specification. Column 7 reports the results once all firm characteristics are controlled for simultaneously. Firm characteristics are computed at the time the CEO was hired (lagged controls) and interacted with a linear time trend. CEO characteristics are controlled for in all specifications. Definitions of all variables are provided in the Appendix. Robust standard errors are reported in parentheses. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

	Dependent Variable: ROA						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
DEM	-0.027	-0.023	-0.024	-0.043*	-0.028	-0.052**	-0.056**
	(0.022)	(0.022)	(0.023)	(0.023)	(0.023)	(0.026)	(0.026)
REP	0.043***	0.041***	0.046***	0.045***	0.043***	0.039***	0.042***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)
Firm size	-0.000***						0.000
	(0.000)						(0.000)
Leverage		-0.008***					-0.009***
		(0.001)					(0.002)
R & D			-0.066***				-0.063***
			(0.007)				(0.007)
Dividends				0.140***			0.166***
				(0.013)			(0.014)
Cash					-0.037***		-0.059***
					(0.012)		(0.012)
Investment						0.088***	0.108***
						(0.010)	(0.010)
REP - DEM	0.0698***	0.0636***	0.0701***	0.0882***	0.0713***	0.0917***	0.0980***
	(0.0242)	(0.0241)	(0.0243)	(0.0240)	(0.0245)	(0.0278)	(0.0269)
Observations	11,300	11,297	11,300	11,294	11,298	10,329	10,321
R-squared	0.308	0.316	0.332	0.308	0.308	0.264	0.316
StatexYear	YES	YES	YES	YES	YES	YES	YES
IndustryxYear	YES	YES	YES	YES	YES	YES	YES
IndustryxState	YES	YES	YES	YES	YES	YES	YES
F-value-rk	78.64	78.83	76.74	78.85	76.74	57.37	59.21
Craig-Donald F-value	75.76	75.85	74.10	77.09	74.22	57.80	60.42
Underidentification	162.6	163.1	159.1	162	158.9	120.7	123.6

Table XIII: Controlling Firm Characteristics

This table reports second stage instrumental variable regression estimation results. The dependent variable is ROA. Through columns 1-6, different firm characteristics are addeed to the baseline specification to see how much of the total effect of ideology is explained by these specific policy choices. Column 7 reports the results once all firm characteristics are controlled for simultaneously. CEO characteristics are controlled for in all specifications. Definitions of all variables are provided in the Appendix. Robust standard errors are reported in parentheses. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level, respectively.

	Dependent Variable: ROA						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
DEM	-0.025	-0.027	-0.006	-0.029	-0.028	-0.052**	-0.016
	(0.023)	(0.022)	(0.022)	(0.022)	(0.023)	(0.026)	(0.026)
REP	0.044***	0.041***	0.048***	0.044***	0.043***	0.039***	0.041***
	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)
Firm size	0.004***						0.004***
	(0.001)						(0.001)
Leverage		-0.049***					-0.055***
		(0.008)					(0.009)
R & D			-0.528***				-0.528***
			(0.038)				(0.039)
Dividends				0.425***			0.411***
				(0.094)			(0.082)
Cash					-0.042***		-0.029**
					(0.012)		(0.012)
Investment						0.081***	0.109***
						(0.010)	(0.010)
REP - DEM	0.0693***	0.0677***	0.0542**	0.0728***	0.0712***	0.0914***	0.0568**
	(0.0248)	(0.0242)	(0.0239)	(0.0242)	(0.0245)	(0.0278)	(0.0266)
Observations	11,300	11,256	11,300	11,288	11,298	10,329	10,280
R-squared	0.309	0.315	0.374	0.322	0.309	0.263	0.389
StatexYear	YES	YES	YES	YES	YES	YES	YES
IndustryxYear	YES	YES	YES	YES	YES	YES	YES
IndustryxState	YES	YES	YES	YES	YES	YES	YES
F-value-rk	74.91	76.98	75.27	76.74	76.79	57.36	54.44
Craig-Donald F-value	72.76	74.22	73.10	74.05	74.23	57.78	55.33
Underidentification	155	159.7	156	159.2	159	120.6	114.5

Table XIV: Effect of CEO Ideology on Firm Risk

The table reports the estimated relation between the firm risk and CEO ideology using OLS estimation. Dependent variable (Risk) is proxied using three variables. Standard deviation of ROA at firm-CEO level (sd(ROA)), volatility of stock returns in each year (sd(ret)) and beta constructed using single factor model. The main independent variables are dummies for Republican and Democrat CEO. Standard errors, clustered as firm level, are reported in the parenthesis. Coefficients marked with *,** and *** are significant at 10%, 5%, 1% level respectively.

	(1)	(2)	(3)	(4)	(5)
	sd(ROA)	sd(ret)	sd(ret)	Beta	Beta
REP	0.00283	-0.00001	0.00003	-0.00238	-0.00171
	(0.00285)	(0.00014)	(0.00016)	(0.00211)	(0.00237)
DEM	0.00492	0.00009	0.00014	-0.00241	-0.00177
	(0.00374)	(0.00020)	(0.00021)	(0.00259)	(0.00276)
REP-DEM	-0.00209	-0.0001	-0.00012	0.00003	0.00006
	(0.00365)	(0.00019)	(0.00021)	(0.00251)	(0.00270)
Observations	1,307	12,465	10,675	12,465	10,675
R-squared	0.252	0.387	0.439	0.168	0.246
Year FE	NO	-	-	-	-
State FE	YES	-	-	-	-
Industry FE	YES	-	-	-	-
StatexYear	NO	YES	YES	YES	YES
IndustryxYear	NO	YES	YES	YES	YES
IndustryxState	YES	YES	YES	YES	YES
StatexIndustryxYear	NO	NO	YES	NO	YES

8 Appendix

8.1 Appendix A: Name Matching Process

I obtain the political contributions data from the Federal Election Commission (FEC) website which reports the name, address and occupation of the donors contributing $200 or more along with the details of the transaction. Since, the names are self-reported by the contributors, it sometimes includes the title and qualification of the individual or his/her nick name. The name in the FEC data is mostly recorded as *last name, first name* although there are many exceptions. The names are cleaned in several ways. First, I search for all the possible different exhaustive combinations of the titles accompanying the name. I clean the name by removing all these titles.[31] Second, the names of individuals with suffix is not consistently coded across the FEC files. For instance, the names are sometimes coded as *Smith, John Sr*, or *Smith, Jr John*. All these names are cleaned and formatted in a consistent way i.e. *Smith, John Jr.*. Similarly, the names with suffix such as: *II, III, IV* are standardized in the same way. Third, the names with punctuations are reported in a non-standard way which may potentially make matching less efficient. For instance, the names are sometimes recorded as: *Smith, M. John Jr* or *Smith, M John Jr,*. All these names are standardize in a way to include full-stop after the middle name and the suffix i.e. *Smith, M. John Jr.*. Finally, the names are then ordered in the standardized way reported by the Execucomp: *firstname middlename lastname, Jr/ Sr.*

Next, I characterize the affiliation of the committee to which the individual contributes. For each contribution, we have the unique committee id to which the donation is given. This information is combined with the committee master file reported by the FEC. The committee master file reports relevant information about the particular committee. It records the address, designation, party affiliation, and, in case of candidate committee, the unique candidate id. The committee reported party affiliation is used as the political affiliation of that particular committee. However, in practice, there are more than half committees with no political affiliation. This happens because the committee is an interest group and does not solely give to one political party, hence, having no unique political affiliation per se. But, this also happens for many candidate committees, which by definition, should have a political affiliation. In order to correct for this problem, I utilize the data on the contributions from the committees to the candidates. This file

[31] For example, consider the FEC entry *Smith, John Mr.*. I change it to *Smith, John*. Similarly, *Smith, Lit. USAF John* is cleaned to *Smith, John*.

records the universe of contributions made by the committees to the candidates. The file includes the unique candidate id to which the contribution is given to. Using these records, the information is collapsed on committee candidate level to have one observation per committee donor and candidate receiver. This information is then matched with the candidate master file, which has the information on the political affiliation of the candidate. The candidate committee files almost uniquely give money to the candidate they are committee of. Thus, the self-reported political affiliation by the committee is augmented by this matched political affiliation from their contribution to the candidates. Moreover, this matched political affiliation measure also serves as a verification or check whether the self-reported political affiliation is consistent with the contributions made by these committees, which it is. This gives us the political affiliation of the committee to which the individual donates the money to.

Finally I match the individual contributions from the FEC data to the individuals we have in the Execucomp based on their full name (First + middle + last name). Since, names in FEC sometimes do not report the middle name, this will lead to under-reporting the contributions made by the individuals.

Appendix
Variable Definitions and Data Sources

Variables	Definitions	Sources
	Panel A: Political Measures	
PII	Total dollar amount given to the Republican party by an individual minus the total dollar amount given to a Democrat Party by an individual as a ratio of the total donations given to both parties by an individual. The index is a measure between -1 and 1, where the higher number represents more Republican political ideology.	Federal Election Commission and Execucomp
Ideo	It is a categorical variable constructed using PII but only including individuals who have contributed in more than one cycle. It equals REP when PII=1, DEM when PII=-1 and EQUAL when PII is in between -0.5 and 0.5.	
REP	Dummy variable taking the value of one if PII=1 and zero otherwise. This represents the CEOs who gave only the Republican candidate or party.	
DEM	Dummy variable taking the value of one if PII = -1 and zero otherwise. This represents the CEOs who gave only to Democrat candidate or party.	
EQUAL	Dummy variable taking the value of one if PII lies between -0.5 and 0.5 and zero otherwise. This represents the CEOs who gave almost equal to both the parties.	
DW Nominate	CEO ideology measured as the weighted average of the DW Nominate of the legislators they contribute to. DW nominate of the legislators is a measure of their ideology using their roll-call voting data in the Congress.	
	Panel B: Firm Characteristics	
Return on Assets(ROA)	Ratio of operating income before depreciation (OIBDP) to the book value of a firm's total assets (AT)	Compustat
Return on Equity (ROE)	Ratio of income before extraordinary items to total common equity	
Return on Sales (ROS)	Ratio of net income to total sale	
Earnings per Share (EPS)	Earnings per share basic excluding extra ordinary items	
Firm size	Natural logarithm of the total assets of the firm(AT)	
BTM	Ratio of book value of equity to market value of equity	
Leverage	Total debt (DLTT+DLC) over the firm's total assets(AT)	
R&D	Ratio of research and Development expense (XRD) to firm's total assets(AT)	

continued

Appendix-*(Continued)*

Variables	Definitions	Sources
Asset-turnover	Ratio of sales to total assets	
Inst	Proportion of total shares outstanding held by the institutional investors	13-F
Inst conc.	The concentration index (HHI) of institutional ownership (between 0 and 1)	
sd(ROA)	Standard Deviation of yearly ROA. The variable is at the firm-CEO level	
sd(Returns)	Standard Deviation of monthly stock returns. The variable is at the firm-year level	CRSP
Beta	Beta obtained from single factor model. The variable is at the firm-year level	
	Panel C: CEO Characteristics	
CEO age	Age of the CEO	Execucomp
Male	Dummy variable equal to one if the gender of the CEO is male	
Tenure	The number of years the CEO has been with the firm	
Experience	The number of years the CEO has been present in any firm in the Execucomp (not necessarily as a CEO)	
Education	Categorical education obtained by the CEO, where the categories are: less than college degree, college degree, graduate degree, doctorate degree and specialization in accounting, finance and business.	Boardex
Top-league	Dummy variable equal to one if the CEO studied from a top 50 university according to the US News Rankings	

continued

Appendix-*(Continued)*

Variables	Definitions	Sources
	Panel D: Instrumental Variables	
Pool REP	Ratio of Republican executives in the same industry-state pair as the firm j, in the year t	Federal Election Commission and Execucomp
Pool DEM	Ratio of Democrat executives in the same industry-state pair as the firm j, in the year t	
Pool EQUAL	Ratio of Equal giver executives in the same industry-state pair as the firm j, in the year t	
Alt Pool REP	Ratio of Republican executives in the same industry-state pair as the firm j, at the time of CEO hire.	
Alt Pool DEM	Ratio of Democrat executives in the same industry-state pair as the firm j, at the time of CEO hire.	
Alt Pool EQ	Ratio of Equal giver executives in the same industry-state pair as the firm j, at the time of CEO hire.	
Pool PII	Average ideology of executives, as measured by PII, in the same industry-state pair as the firm j, in the year t.	
Pool DW Nominate	Average ideology of executives, as measured by DW Nominate, in the same industry-state pair as the firm j, in the year t.	
	Panel E: Other Variables Used	
REP Rule Pres	Dummy variable taking the value of one for the years in which there was a Republican president and zero otherwise	United States Senate
Rep Rule Senate	Categorical variable assigned a value of 1 if both the representatives of the State in the US Senate were Republicans, 0.5 if one was republican and the other a Democrat and 0 if both the senators were Democrats.	
Rep Rule Gov	Categorical variable assigned a value of 1 if the governor of the State is Republicans and 0 otherwise.	
State GDP	The gross domestic product of each state in a given year.	
Industry GDP	The gross domestic product of each industry at a single digit level in a given year.	Bureau of Economic Analysis (BEA)

Corporate Performance Consequences of CEO Participation in Other Boards

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Abstract

We test whether focal firms whose CEOs sit on multiple boards can suffer decreases in performance due to transient attention-grabbing events in firms where CEOs sit as independent directors. We exploit extreme returns (positive and negative), extreme earnings and extreme volatility in firms where CEOs sit as independent directors and find that such distraction leads to an average decrease of approximately 1% of focal firms' ROA, Q, market returns and ROE. This effect is stronger for focal firms that are geographically more distant to firms where CEOs sit as independent directors, which suggests that distraction is costlier in such situations. Additionally, we show that distraction is greater for CEOs that sit on the audit committee or chair a major sub-committee. Finally, we show that these distraction events also lead to lower CEO compensation and a higher probability of forced turnover.

JEL classification: G34, G39

Keywords : Overboarded CEOs, CEO distraction, performance

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1 Introduction

"Don't go overboard!" In their recent policy papers, two of the largest U.S. proxy advisors strongly recommend against the directors who sit on too many boards. Glass Lewis, for instance, terming it as "overboarding", said they would only recommend directors who serve on no more than five boards, instead of six. The limit is much more stringent for CEOs serving on boards which just got updated from three to two seats. BlackRock, the world's largest asset manager, cast 168 votes against directors last year owing to overboarding concerns (Sarah Krouse and Joann S. Lublin, 2017). These policy updates by proxy advisors are reflective of the rising concern that the directors may be stretching themselves too thin due to directorships becoming more time consuming. In the U.S., the number of hours devoted to the duties pertaining to directorship has increased by 18% over the previous decade.

Indeed, recent research had highlighted the negative consequences of directors being too busy or distracted (Ferris et al., 2003; Fich and Shivdasani, 2006; Field et al., 2013; Masulis and Zhang, 2018). Attention is a limited resource. Distracting events demand additional attention and, given limited attention, this implies shifting attention away from another task. Using this intuition, numerous studies have highlighted the consequences of limited attention on corporate finance (Falato et al., 2014; Kempf et al., 2016; Lu et al., 2016; Stein and Zhao, 2016; Liu et al., 2017; Masulis and Zhang, 2018). However, most of this research has exclusively focused on the distraction of directors and its consequences for the firms on whose board they sit.[1] In contrast to the prior literature, in this paper we focus on the distraction of CEOs sitting as directors on boards of other firms and its consequences on the profitability of the focal employing firm. If a CEO is distracted due to his responsibilities as a director in other firms, the employing firms could be affected significantly.

We follow intuition from Kempf et al. (2016) to measure CEO distraction. For each CEO, we first measure a shock as a variable which takes on a non-zero value if one of the firms in CEO's portfolio as independent director (not including the focal firm) receives an extreme positive or negative returns. We then weight this variable with the weight of each of these firm in the CEO's independent director portfolio (including the CEO's focal firm) and with how unimportant the CEO's focal firm is to them. We give more weight to instances where the shocked directorship is of relatively larger market value or focal firm is of relatively

[1] Exceptions include (Kempf et al., 2016) and (Liu et al., 2017)who analyze the effect of distraction of institutional investors rather than directors on various corporate outcomes

smaller market value in the portfolio of directorships.

We then estimate the impact of CEO distraction on firm profitability. In all our specification, we include the firm and year fixed effects to rely on the within firm variation to estimate the impact of CEO distraction. Additionally, we control for whether the CEO sits on in another board and the market value of the firms in which CEO sits as an independent director. This implies that we are comparing changes in firm performance among firms that have a more distracted CEO with changes among firms with a less distracted CEO while both CEOs sit in another board as an independent director.

We find that the CEO's focal firm is significantly negatively affected when the CEOs are more distracted. We find that a one standard deviation increase in the CEO distraction results in a 0.023 lower return-on-asset for the focal firm compared to firms with a non-distracted CEO. The effect is economically sizable as the effect is comparable to the effect generated by having a one standard deviation increase in the proportion of busy directors sitting on the board. These results suggest that the attention-grabbing events at the other firms in which CEO sits as an independent director have an impact on the performance of the CEO's focal firm. The effect is transient in nature and lasts for upto two years after the year in which CEO became distracted.

Next, we present a number of heterogeneity tests to highlight scenarios when CEOs are more distracted. We find that the impact is stronger if the CEO serves as a chair of the audit, compensation, and nominating committees in the other firm, with being chair of the audit committee resulting in the strongest negative impact on the CEO's focal firm. Finally, we find that the CEOs focal firm suffers more if the extreme returns occur at the firm which is geographically further away from the CEO's focal firm. In addition, we distinguish between extreme positive and negative returns to analyze which shocks lead to a greater impact on the CEO's focal firm. We find that both the extreme positive and negative returns have a significant negative impact on the CEO's focal firm.

The results are robust to different ways of measuring distraction, and firm performance. In the baseline specification, we define shock as a dummy variable taking value of one if the firm on which CEO sits as an independent director receives an extreme return defined as top or bottom 15% of the returns. We show that the results are similar if instead we define shock equal to one for top or bottom 10%, 5%, and 1% of the returns. In the baseline specification, we concentrate on the firm's return-on-asset to measure firm performance. We show that the focal firm of the CEO under-performs other firms if we

measure performance using annual market returns, Tobin's Q, and return-on-equity.

Finally, we shed light on how CEO distraction impacts the CEO's outcomes. We find that the CEO distraction does not impact the salary and bonus received by the CEO. However, it impacts the total compensation received by the CEO. In addition, a higher CEO distraction results in a higher likelihood of forced CEO turnover.

This paper makes multiple contributions to the literature. First, this paper contributes to the literature on limited attention in behavioral finance. While previous research has used transient attention grabbing events to highlight the consequences of limited attention of directors and institutional investors on corporate outcomes, this is the first paper to analyze the consequences of such events on CEO distraction.

Moreover, this paper contributes to the vast body of literature on the importance of the CEOs. Seminal paper using exogenous distraction events to highlight the consequences of CEOs being distracted was by Bennedsen et al. (2006) who document that CEO deaths, hospitalization events, and the death of family members have substantial effects on firm performance. This paper, however, solely focuses on CEOs' distraction arising due to their professional commitments. While personal distractions such as death or hospitalization of family members, marriage, divorce or birth of a child are out of the realm of policy and hence, cannot be regularized, the consequences arising from professional distractions allows to bring about useful changes in the policy by investors and regulators. Hence, this paper is useful in shedding light on the current discussions among the investors and proxy advisors on the issue of "overboarding" by documenting a previously unexplored outcome of sitting on multiple boards.

The remainder of the paper is organized as follows: Section 2 describes the data and along with the construction of the measure of distraction used for the analysis. Section 3 the empirical methodology used in the paper and section 4 presents the main results obtained. Section 5 and 6 present the results from additional tests highlighting scenarios when CEOs are more distracted, the horizon of distraction and the effect of CEO distraction on various CEO outcomes. Section 7 presents robustness checks. Lastly, section 8 concludes the paper.

2 Data and Sample

The focus of this paper is on CEOs that hold outside directorships at other boards. These individuals are presumably allocating most of their time and effort on the firm where they hold their CEO title. This is consistent with the strong monetary and reputation incentives CEOs possess. Nonetheless, attention is a limited resource. Even with CEOs prioritizing their CEO position over other jobs, we argue that transient attention-grabbing events that happen at other firms where CEOs participate as outside members generate enough distraction for the CEO that the performance of the focal firm worsens.

Data on CEOs and directors is obtained from BoardEx, a database that gathers biographical information about board members around the globe. BoardEx analysts gathers individuals' full history regarding employment, their education and other activities such as memberships, not-for-profit activities. BoardEx allows to track how individuals are connected across organizations, which is key in our study as we focus on CEOs that are connected with other boards through their role as independent board members. BoardEx starts tracking individuals from 1999, increasing the scope of their data through to nowadays.

We also obtain market prices from CRSP, and financial accounting data and ZIP codes from Compustat. In additional analyses we make use of executive compensation data from Execucomp and use the United States Census Bureau 2018 Gazetteer Files for the translation of ZIP codes to geographical coordinates.[2]

We proceed as follows to match the different databases: first, we obtain information about directors' employment within BoardEx using their employment history to identify CEOs. Also, we identify in the same file whether CEOs hold the role of independent director in another firm simultaneously to that of CEO. Second, we merge the information on directors and board level controls obtained from BoardEx with the attention-grabbing shocks and controls from CRSP and Compustat. Throughout the paper we have data available for 4260 unique firms that we track over the period 1999-2016, although we do not have a balanced panel dataset.

[2] We obtain data on the latitude and longitude for US Zip codes from the US Census Bureau from the following URL: https://www.census.gov/geo/maps-data/data/gazetteer2018.html

2.1 Measuring CEO Distraction

Our main variable of interest is a firm-level proxy for how much the CEO is distracted in a given year due to their role as independent director at another firm. We are inspired by studies such as Masulis and Mobbs (2014), which exploit independent directors' preferences of effort allocation over their different directorships and Kempf et al. (2016), which study how institutional investors get temporarily distracted by attention grabbing shocks. We call this proxy "distraction" and it is defined such that higher values of this measure indicate when CEOs are more distracted in their focal firms. In terms of our distracted CEO hypothesis, a higher distraction implies temporarily less attention to the operations of the focal firm.

The intuition behind CEO distraction and our measure is the following: a given CEO c in a focal firm i is more likely to be distracted if there is an attention-grabbing event in another firm where such CEO participates as an independent director, and that if that other firm is important for the CEO, i.e., the firm represents a large percentage of relative market value over the portfolio of different directorships in which the CEO participates in a given year (Masulis and Mobbs, 2014). These attention grabbing events should at the same time create less distraction for CEOs if their focal firm (where they hold the CEO status) is of relative importance in the portfolio of different directorships in which the CEO participates in a given year, i.e., if the relative market value of the focal firm with respect to the whole portfolio is greater. We first compute the weighted distraction that every independent directorship d generates for a CEO in a given year t, and later we aggregate it at the focal firm level i as:

$$Distraction_{it} = (1 - \omega_{it}) \times \sum_{d}^{D} Shock_{dt} \times \omega_{dt}, \qquad (1)$$

where $Shock_{dt}$ captures whether an attention-grabbing event occurs in a directorship other than the one where the CEOs hold their status as chief officer and ω_{dt} represents how much CEO c cares about the shocked directorship. The weight $(1 - \omega_{it})$ captures how important focal firm f is in CEO i's portfolio.

More specifically, we start calculating ω_{dt}, which indicates the market value weight a directorship d represents over the total portfolio of directorships (including the focal firm

where CEOs hold their CEO status) in a given year t.[3] Secondly, we define $Shock_{dt}$ as a firm-level measure that indicates whether there is an attention-grabbing event going on in firm d at time t. In most of our tests, $Shock_{dt}$ is an indicator variable that takes the value one whenever a directorship shows extreme neutral returns. We define extreme neutral returns for a given firm d at year t where CEOs sit as independent directors as the top or bottom 15%, 10%, 5% or 1% returns from the distribution of firm d. These two terms measure whether there is something happening that could attract the time and attention from CEO c and whether this event happens at a firm that is of relative importance for such CEO. Finally, we define $(1 - \omega_{it})$ where ω_{it} is the relative importance of the focal firm i in the portfolio of directorships for CEO c in year t. We give more weight to instances where the shocked directorship (focal firm) is relatively larger (smaller) and thus the attention-grabbing event will have a greater impact. We weight the measure twice as it could be that a CEO participates in three different directorships (including the focal firm), and including both weights provide a more complete view of the importance of the CEO distraction. Therefore, we define:

$$\omega_{dt} = \frac{MV_{dt}}{MV_{it} + \sum_{d}^{D} MV_{dt}}, \tag{2}$$

and

$$\omega_{it} = \frac{MV_{it}}{MV_{it} + \sum_{d}^{D} MV_{dt}}, \tag{3}$$

where MV_{it} and MV_{dt} are the market value of the focal firm and a firm where the CEO participates as an independent director.

To sum up, our measure of CEO distraction (Equation 1) depends on whether there are attention-grabbing events at other firms in which CEOs participate, whether those firms are of relative importance for the CEO and whether the focal firm is of relative unimportance for the CEO.

Table I shows the summary statistics for the main variables used in the paper. We see that mean of the CEO distraction according to the baseline measure is 0.02. We see that 26%

[3] Market value is calculated as *prcc f*csho* from Compustat.

of the CEOs sit as an independent director in another firm in a given year. On average, 4% of the CEOs sit as an independent director in another firm within the same industry. Around 7% of the independent directors sit in more than three other boards. The average return-on-asset in our sample is -0.02 with a standard deviation of 0.22.

3 Empirical Methodology

In this section we discuss the main empirical strategy. We are interested in evaluating the impact of CEO distraction due to extreme returns at the other firm in which the CEO sits as an independent director. We estimate the following equation:

$$ROA_{i,t} = a + \beta Distraction_{i,t} + \gamma' Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it},$$

where $ROA_{i,t}$ is the return-on-asset for firm i in the year t. $Distraction_{i,t}$ is the measure of CEO distraction which takes on a non-zero value if the CEO is distracted. In the baseline specification, we measure the distraction variable using different definitions of neutral shocks at 15%, 10% and 5% i.e. bottom and top 15%, 10% and 5% performance in the firms where the CEO holds an independent director position. In the augmented specification, we explore whether the CEO's are more distracted due to positive or negative shocks. $Controls_{i,t-1}$ are one-period lagged firm controls. We include board controls such as the proportion of independent directors, proportion of busy directors in the focal firm, board size and board tenure; firm controls such as the firm size, market-to-book value, leverage, cash and sales growth; and CEO controls such as the tenure of the CEO, age and gender of the CEO.

Additionally, to account for differences in firm performance among firms in which the CEO sits in another board and those in which CEOs do not have any outside directorship, we control for whether the CEO holds a seat in another board as an independent director (Outside Seat) and the proportion of firms where CEOs sit as independent board members that are in the same industry (Pct Same Industry). To account for market size of the firms in which the CEO sits as an independent director, we control for the log of the average market value of firms where CEOs sit as independent directors (Mkv Other).

π_i denotes the firm fixed effects. This expression absorbs all the firm-specific time-invariant factors that may explain firm performance. Factors such as the location and the industry of the firm are absorbed by this term. τ_t accounts for the year effects which absorb shocks

which are common to all the firms in a given year. This term absorbs shocks such as the business cycle fluctuations.

Our main parameter of interest is the β. β measures how the performance of the focal firm changes with respect to a unit increase in the distraction of the CEO. For β to reflect an impact of distracted CEO and not some CEO or firm-specific factors, the measure of distraction needs to be orthogonal to the CEO and focal firm. Given that we focus on the attention-grabbing events at other firms in which CEOs participate, it is likely that these events are uncorrelated with the characteristics of the focal firm.

4 Main Results

Table II shows the main results. In all specifications, we include firm and year fixed effects and cluster the standard errors at the firm level. We see that a higher CEO distraction results in a lower firm performance for the focal firm. We see that a unit increase in the CEO distraction results in a 0.042 lower return-on-asset. This implies that a one standard deviation increase in the distraction results in a 0.023 standard deviation lower return-on-asset for the focal firm.

The effect is similar across the different definitions of CEO distraction. We measure CEO distraction using 15%, 10%, 5%, and 1% neutral returns in Columns 1, 2, 3, and 4, respectively. We see that the a unit increase in the CEO distraction as measured according to 10%, 5%, and 1% extreme events in the firm where the CEO is an independent director leads to a 0.038, 0.045, and 0.037 lower return-on-asset in the focal firm of the CEO.

We also see that the proportion of CEOs sitting in the board of other firms in the same industry do not have an impact on the performance of the focal firm. We see that a higher proportion of busy directors is associated with a 0.046 lower return-on-asset. Since the magnitudes and standard deviations of CEO distraction and busy directors are similar, these estimates suggest that the impact of a one standard deviation increase in the CEO distraction on the focal firm is similar to the impact of a one standard deviation increase in the proportion of busy directors.

5 When are CEOs more distracted?

5.1 Chair and subcommittee participation

The CEO distraction stemming from CEOs sitting on board of other firms maybe more if these individuals have important role in the board. In this section, we test whether CEOs having an important role in the board leads to a greater loss in firm profitability in the focal firm. Specifically, we analyze CEO distraction due to role of CEO as a chairperson of one of the three committees: audit, compensation, and nomination.

Table III shows the results. We see that a one unit increase in the CEO distraction stemming from firm in which CEO is chairperson of one of the three committees results in a 0.060 lower return-on-asset in the CEO's focal firm. On the contrast, a similar shock leads to a 0.038 lower return-on-asset in the CEO's focal firm if the CEO is not the chairperson of one of the three committees.

The three key committees: audit, compensation, and nomination committees may require different level of attention as a result of a shock to the firm profitability. In Columns 2 to 5, we specifically test how the impact on the focal firm differs depending on whether the CEO is a chairperson of each of these three different committees. In Column 2, we see that a one unit increase in the CEO distraction when CEO is chairperson of the audit committee results in a 0.047 lower return-on-asset, while a similar increase in distraction results in a 0.039 lower return-on-asset if the CEO is not chairperson of the audit committee. In Column 3, we see that a one unit increase in the CEO distraction when CEO is chairperson of the audit committee results in a 0.048 lower return-on-asset, while a similar increase in distraction results in a 0.042 lower return-on-aseet if the CEO is not chairperson of the audit committee. These results suggest that being the chairperson of the audit and nomination committees require more CEO attention relative to the compensation committee.

5.2 Geographic Distance

The CEO distraction maybe greater or lower depending on the geographic distance of the firm in which CEO sits as an independent director. For instance, after an onslaught of a negative shock to a firm, there may be board meetings to discuss how to address the concerns and devise new strategies. It would arguably be easier to attend such meetings without being away from one's focal firm for greater amount of time if the firm in which

CEO sits as a director is closer to her focal firm. It may also be easier to monitor the firms which are close and hence may consume less time and attention of the CEO. In this section, we test whether CEOs are more distracted by firms which are geographically close to their focal firm.

Table IV shows the results. We define far and near as dummy variables equal to one if the geogprahic distance between the firm in which CEO sits as an independent director and focal firm of the CEO is less than median and greater than the median, respectively. We see that the shock to firm in which CEO sits as an independent director results in a greater decrease in firm profitability if the firm is geographically far from the CEO's focal firm. We see that a unit increase in the CEO distraction results in a 0.045 lower return-on-asset if the firm is geographically further away from the CEO's focal firm, while it results in a 0.028 lower return-on-asset if the firm is geographically close to the CEO's focal firm.

6 Additional Results

6.1 Horizon of impact

In this section, we analyze the dynamic impact of CEO distraction on firm performance. Table V shows the impact of CEO distraction on firm performance in the subsequent years. We see that the impact of CEO distraction lasts for two years i.e. the year and the year following the year in which CEO is distracted. We see that a unit increase in the CEO distraction leads to a 0.016 lower return-on-asset in the year following the year in which CEO was distracted due to extreme events at the firm in which CEO sits as an independent director. The impact in the subsequent year is around 40% of the impact of CEO distraction in the year in which CEO is distracted.

We see a similar dynamic pattern across different definitions of firm performance. We see that the a larger CEO distraction also impacts the annual market returns last for two years. A unit increase in the CEO distraction results in a 1 percentage point lower annual market return in the CEO's focal firm in the year following the year in which CEO became distracted. These estimates are three times larger than the impact of CEO distraction on the annual market return in the year in which CEO became distracted. This suggests that it takes some time for the impact of CEO distraction to reflect into the market returns.

In Panel C, we measure the impact of CEO distraction on the long-term firm performance

as measured by Tobin's Q. We see that the impact of CEO distraction on firm performance lasts for three years following the CEO distraction. A one standard deviation increase in the CEO distraction results in a 0.012 and 0.007 standard deviation lower Tobin's Q in the year $t + 1$ and year $t + 2$, respectively. Finally, in Panel D, we see that the impact of CEO distraction on return-on-equity does not extend to the subsequent years. Together, these results show that the impact of CEO distraction on firm performance lasts for one year after the distraction.

6.2 CEO outcomes

Does CEO distraction result in any change in CEO outcomes? In this section, we explore whether CEO distraction impacts the CEO outcomes. Specifically, we are interested in whether the distraction impacts the CEO compensation and CEO turnover. Table VI shows the impact of distraction on CEO outcomes. We see that a higher CEO distraction does not impact the salary (Column 1) and bonus (Column 2) of the CEO. On the other hand, we see that a higher CEO distraction results in a lower total compensation. We see that a one unit increase in the CEO distraction results in a 0.013 standard deviation lower total compensation (Column 3).

In Columns 4 to 6, we study whether the CEO turnover is affected by the CEO distraction. We see that CEO distraction does not change the probability of unconditional CEO turnover (Column 4). However, once we condition the CEO turnover on the market return or return-on-asset, we see that CEO distraction leads to a higher CEO turnover. Specifically, we see a one unit increase in the CEO distraction leads to a 2.3 and 2.2 percentage points higher CEO turnover conditioning for market returns and return-on-asset increases, respectively. These results suggest a 10% increase in the probability of CEO turnover for an average firm.

7 Robustness Tests

7.1 Alternative Shocks to CEO Distraction

In this section, we show that the results are robust to alternative definition of shocks used to capture CEO distraction. First, instead of using a continuous measure of distraction as we did in our baseline specification, we define distraction as a dummy variable taking value one whenever CEO is distracted and zero otherwise. Hence, we do not do any weighting

as before and use the dummy "shock" to capture CEO distraction. In Panel A, Table VII we see that the return-on-asset in the firms with distracted CEOs is 0.007 or 0.03 standard deviation lower compared to firms with a non-distracted CEO. These results are much smaller in magnitude to the previous results suggesting that the level of distraction matters for the performance of focal firm.

Second, we analyze whether CEOs are more reactive to positive shocks or the negative shocks. Panel B reports the effect of the negative shocks at the firm in which CEO sits as director on CEO's focal firm. We see that a one standard deviation higher CEO distraction due to negative shocks at the firm in which CEO sits as a director leads to a 0.013 standard deviations lower return-on-asset. In Panel C, we see how positive shocks impact CEO's focal firm. We see that a one standard deviation increase in the CEO distraction due to positive shocks at the other firm in which CEO sits as a director leads to a 0.018 standard deviation lower return-on-asset. The impact of a positive shock is 40% larger in magnitude compared to the negative shock.

In Panel D, we test whether volatility shocks at the firm in which CEO sits as a director impact the firm performance at the focal firm. We see that the volatility shocks also result in lower firm performance at the CEO's focal firm. A one standard deviation increase in CEO distraction due to higher volatility of return-on-asset in the firm in which CEO serves as an independent director leads to a 0.009 standard deviation lower return-on-asset in the CEO's focal firm. These results paint a consistent picture that the CEO distraction due to positive, negative, and volatility shocks at the firm in which CEO sits as a director lead to a lower firm performance in the CEO's focal firm.

7.2 Alternate Measures of Performance

In this section, we show that the results are robust to alternate ways of measuring firm performance. Table VIII shows the results. In Panel A, we measure the performance using annual market return. We see that a unit increase in the CEO distraction results in a 0.3 to 1.6 percentage points lower annual market return depending on the definition of distraction in the CEO's focal firm. In Panel B, we see measure the impact of CEO distraction on firm's long term performance as measured by Tobin's Q. We see that firms with a unit higher distracted CEO have a 0.45 to 0.28 lower Tobin's Q according to different definitions of distraction. Finally, in Panel C, we measure the impact of CEO distraction on firm performance using return-on-equity as a measure for firm performance. We see that a unit higher distracted CEO results in 0.069 to 0.094 lower return-on-equity

according to different measures of distraction. These results together show that the impact of CEO distraction on firm performance is robust not only to different cut-offs of defining CEO distraction, but also to various different measures of firm performance.

8 Conclusion

In this paper, we analyze the impact of CEO distraction on firm performance. We measure CEO distraction as the transient extreme positive or negative returns in the firms in which CEO sits as an independent director. We find that the CEO's focal firm suffers as a result of these attention-grabbing events in the firms among CEO's directorship portfolio. A one standard deviation increase in the CEO distraction results in a 0.023 standard deviation lower return-on-asset in the CEO's focal firm. The effect is stronger if the CEO serves as a chair in one of the committees in the other firm and if the firm is geographically distant from the CEO's focal firm. We also show that these distraction events also lead to lower CEO compensation and higher forced turnover. These results suggest that CEO distraction can be costly for the focal firm.

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Table I: Sample Descriptive Statistics.

	Observations	Mean	Std Dev	P25	P50	P75
ROA	25708	-0.02	0.22	-0.02	0.04	0.08
Return	25468	0.02	0.03	0	0.01	0.03
Tobin Q	25708	1.92	1.61	0.97	1.42	2.23
ROE	25705	-0.01	0.65	-0.03	0.08	0.16
Distraction 15/85 Neutral	25708	0.02	0.12	0	0	0
Distraction 10/90 Neutral	29223	0.02	0.09	0	0	0
Distraction 5/95 Neutral	32437	0.01	0.07	0	0	0
Distraction 1/99 Neutral	34163	0	0.05	0	0	0
Distracted 15/85 Neutral	25708	0.07	0.26	0	0	0
Distraction 15/85 Negative	29896	0.01	0.09	0	0	0
Distraction 15/85 Positive	32163	0.01	0.08	0	0	0
Distraction 15/85 Volatility	31755	0.01	0.08	0	0	0
Salary	12821	776.51	344.72	519.62	737.31	996.44
Bonus	12821	326.50	696.59	0	0	332.46
Compensation	12769	5494.63	5477.78	1761.37	3796.37	7156.47
Turnover	25708	0.20	0.40	0	0	0
Forced Turnover (Return)	25708	0.03	0.18	0	0	0
Forced Turnover (ROA)	25708	0.04	0.19	0	0	0
Pct Same Industry	25708	0.04	0.2	0	0	0
Pct Busy	25708	0.07	0.11	0	0	0.12
Pct Ind	25708	0.71	0.17	0.6	0.75	0.86
Outside Seat	25708	0.26	0.44	0	0	1
Mkv Other	25708	6.67	2.48	4.97	6.52	8.16
CEO Tenure	25708	9.02	7.81	3	7	12
CEO Age	25708	55.69	8.22	50	56	61
Female CEO	25708	0.03	0.17	0	0	0
Board Tenure	25708	6.99	3.45	4.5	6.44	8.86
Board Size	25708	8.58	1.30	7.02	9.03	9.97
Firm Size	25708	6.1	1.99	4.67	6.07	7.48
MTB	25708	3.24	4.77	1.36	2.25	3.81
Leverage	25708	0.2	0.2	0.01	0.15	0.31
Cash	25708	0.22	0.23	0.04	0.14	0.32
Sales Growth	25708	0.14	0.45	-0.02	0.07	0.2

ROA is measured as the ratio between net income before special items (ib) over total assets (at). **ROE** is measured as the ratio between net income before special items (ib) over the book value of common equity (ceq). **Tobin Q** is measured as the ratio between the market value of equity (csho*prcc f), plus debt in short-term liabilities (dlc), plus long-term debt (dltt), plus the liquidating value of preferred shares (pstkl) and plus the accumulated tax deferrals (txdb), over the book value of total assets (at). **Return** is the yearly-average return at the fiscal year end. **Distraction 15/85 Neutral** is the measure of CEO distraction generated by extreme positive and negative returns in firms where the CEO holds an independent director position. These shocks are defined as the bottom or top 15% of the sample time series distribution of a firms' return for **Distraction 15/85 Neutral**. **Distraction 10/90 Neutral** is the measure of CEO distraction generated by extreme positive and negative returns in firms where the CEO holds an independent director position. These shocks are defined as the bottom or top 10% of the sample time series distribution of a firms' return for **Distraction 10/90 Neutral**. **Distraction 5/95 Neutral** is the measure of CEO distraction generated by extreme positive and negative returns in firms where the CEO holds an independent director position. These shocks are defined as the bottom or top 5% of the sample time series distribution of a firms' return for **Distraction 5/95 Neutral**. **Distraction 1/99 Neutral** is the measure of CEO distraction generated by extreme positive and negative returns in firms where the CEO holds an independent director position. These shocks are defined as the bottom or top 1% of the sample time series distribution of a firms' return for **Distraction 1/99 Neutral**. **Distracted 15/85 Neutral** is an indicator variable that takes the value 1 whenever there are extreme positive or negative returns in firms where the CEO holds an independent director position. These shocks are defined as the bottom or top 15% of the sample time series distribution of a firms' return for **Distracted 15/85 Neutral**. **Distraction 15/85 Negative** is the measure of CEO distraction generated by extreme negative returns in firms where the CEO holds an independent director position. These shocks are defined as the bottom 15% of the sample time series distribution of a firms' return for **Distraction 15/85 Negative**. **Distraction 15/85 Positive** is the measure of CEO distraction generated by extreme positive returns in firms where the CEO holds an independent director position. These shocks are defined as the top 15% of the sample time series distribution of a firms' return for **Distraction 15/85 Positive**. Distraction 15/85 Volatility is the measure of CEO distraction generated by extreme volatility (volatility is calculated as the annual standard deviation of monthly returns) in firms where the CEO holds an independent director position. These shocks are defined as the top 15% of the sample time series distribution of a firms' volatility for **Distraction 15/85 Volatility**. **Salary** is the inflation-adjusted annual fixed salary (in thousands of USD) of a CEO. **Bonus** is the inflation- adjusted annual bonus (in thousands of USD) of a CEO. **Compensation** is the inflation-adjusted total annual compensation (in thousands of USD) of a CEO. **Turnover** is an indicator variable that takes the value one whenever CEOs are in the final year of their tenure. **Forced Turnover (Return)** is an indicator variable that takes the value one whenever CEOs are in the final year of their tenure and the firm's market return in the previous year is at the bottom quartile of the industry-year distribution. **Forced Turnover (ROA)** is an indicator variable that takes the value one whenever CEOs are in the final year of their tenure and the firm's ROA in the previous year is at the bottom quartile of the industry-year distribution. **Pct Same Industry** measures the percentage of firms where CEOs sit as independent board members and that are classified in the same 2-digit SIC code as the CEO focal firm. **Pct Busy** is the percentage of independent directors that hold at least three board seats in a given year. **Pct Ind** is the percentage of independent directors in a given year. **Outside Seat** is an indicator variable that takes the value one whenever the CEO holds a seat in another board as an independent director. **Mkv Other** is the natural logarithm of the average market value of firms where CEOs sit as independent directors. **CEO Tenure** is the number of years that a CEO has held their role as CEO. **CEO Age** is the age of the CEO. **Female CEO** is an indicator variable that takes the value one if the CEO is of female gender. **Board Tenure** is the average number of years that Independent Directors have held their role in the firm. **Board Size** is the number of board members in a given firm and year. **Firm Size** is the natural logarithm of total assets (ln(at)). **MTB** is the market-to-book ratio calculated as the ratio between a firm's market value of equity (prcc f*csho) and book value of equity (ceq). **Leverage** is the ratio between total debt (dlc + dltt) and total assets (at). **Cash** is the cash-to-assets ratio measured as cash (ch) divided by total assets (at). **Sales Growth** is the growth rate of sales $((sale_t\text{-}sale_{t-1})/sale_t)$.

Table II: The Effect of CEO Distraction on Operating Performance.

Dep. Var: ROA	(1)	(2)	(3)	(4)
Neutral Shocks	15/85	10/90	5/95	1/99
Distraction	-0.042***	-0.038***	-0.045***	-0.037*
	(-5.109)	(-3.981)	(-3.192)	(-1.945)
Pct Same Industry	0.007	0.004	0.010	0.012
	(0.746)	(0.466)	(1.063)	(1.311)
Pct Busy	-0.046***	-0.057***	-0.055***	-0.052***
	(-3.100)	(-3.846)	(-3.818)	(-3.725)
Pct Ind	0.061***	0.059***	0.059***	0.055***
	(3.648)	(3.621)	(3.808)	(3.654)
Outside Seat	-0.016***	-0.016***	-0.014***	-0.013***
	(-4.122)	(-4.147)	(-3.747)	(-3.536)
Mkv Other	0.012***	0.011***	0.010***	0.009***
	(7.508)	(7.239)	(6.564)	(6.229)
CEO Tenure	-0.001**	-0.001**	-0.001*	-0.001*
	(-2.062)	(-2.169)	(-1.955)	(-1.850)
CEO Age	0.000	0.000	0.000	0.000
	(0.762)	(1.046)	(0.858)	(0.724)
Female CEO	-0.018	-0.014	-0.013	-0.012
	(-1.420)	(-1.159)	(-1.143)	(-0.992)
Board Tenure	0.002***	0.002***	0.002***	0.002***
	(3.643)	(3.361)	(3.291)	(3.410)
Board Size	0.001	0.005	0.008	0.013
	(0.096)	(0.473)	(0.824)	(1.359)
Firm Size	-0.015***	-0.012***	-0.014***	-0.016***
	(-3.131)	(-2.681)	(-3.425)	(-3.968)
MTB	0.002***	0.002***	0.002***	0.002***
	(4.399)	(4.801)	(4.925)	(5.222)
Leverage	-0.033*	-0.040**	-0.041**	-0.046***
	(-1.844)	(-2.330)	(-2.392)	(-2.698)
Cash	-0.000	0.002	-0.004	-0.004
	(-0.008)	(0.137)	(-0.220)	(-0.250)
Sales Growth	0.003	0.004	0.002	0.004
	(0.646)	(0.838)	(0.533)	(1.029)
Constant	-0.071*	-0.095***	-0.078**	-0.065*
	(-1.902)	(-2.671)	(-2.187)	(-1.871)
Observations	25,708	29,223	32,437	34,163
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R2	0.0167	0.0153	0.0141	0.0141

This table depicts the results from the fixed effects estimation of the following equation:

$$ROA_{i,t} = \alpha + \beta Distraction_{i,t} + \gamma' Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it}$$

For Column (1) the measure of CEO distraction is **Distraction 15/85 Neutral**, for Column (2) the measure is **Distraction 10/90 Neutral**, for Column (3) is **Distraction 5/95 Neutral** and for Column (4) is **Distraction 1/99 Neutral**. Neutral shocks are defined as the bottom or top 15% of the return distribution of a given firm. Coefficients are reported with t-statistics in parentheses. Robust standard errors are clustered at the firm level. All variables are defined in Table I. ***, **, and * represent significance levels at the 1%, 5%, and 10% levels, respectively.

Table III: The Impact of Chair and Subcommittee Participation.

Dep. Var.: ROA	(1)	(3)	(4)	(5)
Distraction 15/85 Neutral*Chair Yes	-0.060***			
	(-2.842)			
Distraction 15/85 Neutral*Chair No	-0.038***			
	(-4.398)			
Distraction 15/85 Neutral*Audit Comm Yes		-0.047***		
		(-3.486)		
Distraction 15/85 Neutral*Audit Comm No		-0.039***		
		(-3.967)		
Distraction 15/85 Neutral*Comp Comm Yes			-0.019	
			(-1.416)	
Distraction 15/85 Neutral*Comp Comm No			-0.048***	
			(-5.188)	
Distraction 15/85 Neutral*Nom Comm Yes				-0.044
				(-0.970)
Distraction 15/85 Neutral*Nom Comm No				-0.042***
				(-5.087)
Observations	25,708	25,708	25,708	25,708
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R2	0.0168	0.0167	0.0169	0.0167

This table depicts the results from the fixed effects estimation of the following equation:

$$ROA_{i,t} = \alpha + \beta_1 Interaction_{1,,i,t} + \beta_2 Interaction_{2,i,t} + \gamma' Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it}$$

Table III shows the cross-sectional differences of CEO participation in sub-committees of firms where they hold an independent director position. CEO distraction is generated by neutral shocks defined as extreme positive and negative events at boards where the CEO participates as an independent director. Neutral shocks are defined in this Table as the bottom or top 15% returns from the return distribution of a given firm. **Chair Yes** is a dummy variable that takes the value 1 whenever the neutral shock stems from a board in which the CEO holds the title of Chairperson of a major subcommittee (audit, compensation or nominating committee). **Chair No** is a dummy variable that takes the value 1 whenever the neutral shock stems from a board in which the CEO does not hold the title of Chairperson of a major subcommittee (audit, compensation or nominating committee). **Audit Comm Yes** is a dummy variable that takes the value 1 whenever the neutral shock stems from a board in which the CEO participates as a member of the audit committee. **Audit Comm No** is a dummy variable that takes the value 1 whenever the neutral shock stems from a board in which the CEO does not participate as a member of the audit committee. **Comp Comm Yes** is a dummy variable that takes the value 1 whenever the neutral shock stems from a board in which the CEO participates as a member of the compensation committee. **Comp Comm No** is a dummy variable that takes the value 1 whenever the neutral shock stems from a board in which the CEO does not participate as a member of the compensation committee. **Nom Comm Yes** is a dummy variable that takes the value 1 whenever the neutral shock stems from a board in which the CEO participates as a member of the nominating committee. **Nom Comm No** is a dummy variable that takes the value 1 whenever the neutral shock stems from a board in which the CEO does not participate as a member of the nominating committee. All regressions include firm FE and year FE and Controls from Table II. Coefficients are reported with t-statistics in parentheses. Robust standard errors are clustered at the firm level. All variables are defined in Table I except for those defined above. ***, **, and * represent significance levels at the 1%, 5%, and 10% levels, respectively.

Table IV: The Impact of Geographical Distance.

Dep. Var.: ROA	(1)	(2)	(3)	(4)
Neutral Shocks	15/85	10/90	5/95	1/99
Distraction*Far	-0.045***	-0.043***	-0.053***	-0.048**
	(-4.822)	(-3.832)	(-3.168)	(-2.211)
Distraction*Near	-0.028**	-0.021	-0.013	0.012
	(-1.963)	(-1.252)	(-0.711)	(0.352)
Observations	25,708	29,223	32,437	34,163
Control	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R2	0.0168	0.0153	0.0141	0.0142

This table depicts the results from the fixed effects estimation of the following equation:

$$ROA_{i,t} = a + \beta_1 Distraction * Far_{i,t} + \beta_2 Distraction * Near_{i,t} + \gamma' Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it}$$

Table IV shows the cross-sectional differences of CEO participation in sub-committees of firms where they hold an independent director position. CEO distraction is generated by neutral shocks defined as extreme positive and negative events at boards where the CEO participates as an independent director. Neutral shocks are defined in this Table as the bottom or top 15% returns from the return distribution of a given firm. **Far** is a dummy variable that takes the value 1 whenever the geographical distance from the focal firm to the shocked firm is above the median geographical distance between focal firms and the firms where CEOs (of the focal firm) participate as independent board members. **Near** is a dummy variable that takes the value 1 whenever the geographical distance from the focal firm to the shocked firm is above the median geographical distance between focal firms and the firms where CEOs (of the focal firm) participate as independent board members. All regressions include firm FE and year FE and Controls from Table II. Coefficients are reported with t-statistics in parentheses. Robust standard errors are clustered at the firm level. All variables are defined in Table I except for those defined above. ***, **, and * represent significance levels at the 1%, 5%, and 10% levels, respectively.

Table V: Horizon of the Impact of CEO Distraction on Performance.

	(1)	(2)	(3)	(4)
Panel A	ROA_{t+1}	ROA_{t+2}	ROA_{t+3}	ROA_{t+4}
Distraction 15/85 Neutral	-0.016**	-0.003	0.006	0.006
	(-2.007)	(-0.429)	(0.795)	(0.792)
Observations	22,590	19,919	17,655	15,389
Adj. R2	0.00822	0.00864	0.00858	0.0121
Panel B	$Return_{t+1}$	$Return_{t+2}$	$Return_{t+3}$	$Return_{t+4}$
Distraction 15/85 Neutral	0.010***	0.003	0.004	0.002
	(3.873)	(1.045)	(1.522)	(0.663)
Observations	22,408	19,785	17,551	15,323
Adj. R2	0.0436	0.0139	0.00972	0.00335
Panel C	Tobin Q_{t+1}	Tobin Q_{t+2}	Tobin Q_{t+3}	Tobin Q_{t+4}
Distraction 15/85 Neutral	-0.161***	-0.096*	-0.003	-0.056
	(-2.926)	(-1.726)	(-0.041)	(-0.955)
Observations	22,591	19,920	17,656	15,390
Adj. R2	0.0553	0.0270	0.0219	0.0170
Panel D	ROE_{t+1}	ROE_{t+2}	ROE_{t+3}	ROE_{t+4}
Distraction 15/85 Neutral	-0.020	-0.014	0.026	0.025
	(-0.524)	(-0.338)	(0.834)	(0.706)
Observations	22,587	19,915	17,654	15,386
Adj. R2	0.00630	0.00472	0.00393	0.00457

This table depicts the results from the fixed effects estimation of the following equations:

$$ROA_{i,(t+y)} = \alpha + \beta Distraction\ 15/85\ Neutral_{i,t} + \gamma^{l} Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it}; \quad y = 1,2,3,4.$$

$$Return_{i,(t+y)} = \alpha + \beta Distraction\ 15/85\ Neutral_{i,t} + \gamma^{l} Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it}; \quad y = 1,2,3,4.$$

$$Tobin\ Q_{i,(t+y)} = \alpha + \beta Distraction\ 15/85\ Neutral_{i,t} + \gamma^{l} Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it}; \quad y = 1,2,3,4.$$

$$ROE_{i,(t+y)} = \alpha + \beta Distraction\ 15/85\ Neutral_{i,t} + \gamma^{l} Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it}; \quad y = 1,2,3,4.$$

Table V shows the impact of CEO distraction generated by neutral shocks defined as extreme positive and negative events at boards where the CEO participates as an independent director. Neutral shocks are defined in this Table as the bottom or top 15% returns from the return distribution of a given firm. All regressions include firm FE and year FE and Controls from Table II. Coefficients are reported with t-statistics in parentheses. Robust standard errors are clustered at the firm level. All variables are defined in Table I. ***, **, and * represent significance levels at the 1%, 5%, and 10% levels, respectively.

Table VI: The Impact of CEO Distraction on CEO Outcomes

	(1) Salary	(2) Bonus	(3) Compensation	(4) Turnover	(5) Forced Turnover (Return)	(6) Forced Turnover (ROA)
Distraction Neutral 15/85	2.791	-32.443	-593.263**	0.020	0.023**	0.022*
	(0.239)	(-0.818)	(-2.240)	(0.860)	(2.196)	(1.694)
Observations	12,821	12,821	12,769	25,709	25,709	25,709
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.0909	0.0132	0.0336	0.0263	0.0190	0.0105

This table depicts the results from the fixed effects estimation of the following equation:

$$CEO\ Outcome_{i,t} = \alpha + \beta Distraction\ Neutral\ 15/85_{i,t} + \gamma' Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it}$$

For Column (1) the measure of CEO outcome is **Salary**, for Column (2) the measure is **Bonus**, for Column (3) is **Compensation**, for Column (4) is **Turnover** and for Columns (5) and (6) the measures are **Forced Turnover (Return)** and **Forced Turnover (ROA)**. Neutral shocks are defined as the bottom or top 15% of the return distribution of a given firm. All regressions include firm FE and year FE and Controls from Table II. Coefficients are reported with t-statistics in parentheses. Robust standard errors are clustered at the firm level. All variables are defined in Table I. ***, **, and * represent significance levels at the 1%, 5%, and 10% levels, respectively.

Table VII: Alternative Shocks to CEO Distraction.

Dep. Var: ROA				
Panel A	(1)	(2)	(3)	(4)
Dummy Indicator (Neutral Shocks)	*15/85*	*10/90*	*5/95*	*1/99*
Distracted	-0.007**	-0.007*	-0.005	-0.002
	(-2.140)	(-1.939)	(-1.105)	(-0.291)
Observations	25,708	29,223	32,437	34,163
Adj. R2	0.0158	0.0148	0.0137	0.0140
Panel B				
Negative Shocks	*15*	*10*	*5*	*1*
Distraction	-0.032***	-0.029***	-0.035**	-0.037*
	(-3.433)	(-2.731)	(-2.030)	(-1.945)
Observations	29,896	31,707	33,422	34,163
Adj. R2	0.0150	0.0146	0.0140	0.0141
Panel C				
Positive Shocks	*85*	*90*	*95*	*1*
Distraction	-0.049***	-0.039***	-0.051**	-
	(-4.041)	(-2.758)	(-2.216)	
Observations	32,163	33,860	35,356	36,341
Adj. R2	0.0153	0.0140	0.0134	0.0133
Panel D				
Volatility Shocks	*85*	*90*	*95*	*1*
Distraction	-0.025	-0.043***	-0.036*	-
	(-1.454)	(-2.581)	(-1.655)	
Observations	31,755	33,497	35,140	36,341
Adj. R2	0.0128	0.0120	0.0133	0.0133

This table depicts the results from the fixed effects estimation of the following equation:

$$ROA_{i,t} = \alpha + \beta Distraction_{i,t} + \gamma' Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it}$$

Panel A uses a dummy indicator that takes the value one whenever a CEO that participates as an independent director in another board that is affected by a neutral shock. Neutral shocks are defined as the bottom or top 15% (Column (1) panel A), 10% (Column (2) panel A), 5% (Column (3) panel A) and 1% (Column (4) panel A) of the return distribution of a given firm. Panel B uses as shocks to CEO distraction negative events defined as the bottom 15% (Column (1) panel B), 10% (Column (2) panel B), 5% (Column (3) panel B) and 1% (Column (4) panel B) of the return distribution of a given firm. Panel C uses as shocks to CEO distraction positive events defined as the top 15% (Column (1) panel C), 10% (Column (2) panel C), 5% (Column (3) panel C) and 1% (Column (4) panel C) of the return distribution of a given firm. Panel D uses as shocks to CEO distraction extreme volatility events defined as the top 15% (Column (1) panel D), 10% (Column (2) panel D), 5% (Column (3) panel D) and 1% (Column (4) panel D) of the volatility distribution of a given firm' s returns. All regressions include firm FE and year FE and Controls from Table II. Coefficients are reported with t-statistics in parentheses. Robust standard errors are clustered at the firm level. All variables are defined in Table I. ***, **, and * represent significance levels at the 1%, 5%, and 10% levels, respectively.

Table VIII: Alternative Measures of Performance.

Neutral Shocks	(1)	(2)	(3)	(4)
Panel A: Market Return	*15/85*	*10/90*	*5/95*	*1/99*
Distraction	-0.003**	-0.004**	-0.008***	-0.016***
	(-2.071)	(-2.149)	(-2.862)	(-3.538)
Observations	25,465	28,980	32,195	33,921
Adj. R2	0.0306	0.0429	0.0577	0.0737
Panel B: Tobin's Q	*15/85*	*10/90*	*5/95*	*1/99*
Distraction	-0.448***	-0.411***	-0.280***	-0.301***
	(-8.089)	(-6.221)	(-3.760)	(-3.447)
Observations	25,709	29,224	32,438	34,164
Adj. R2	0.128	0.121	0.116	0.115
Panel C: ROE	*15/85*	*10/90*	*5/95*	*1/99*
Distraction	-0.094***	-0.072**	-0.071*	-0.069
	(-2.877)	(-2.012)	(-1.676)	(-1.183)
Observations	25,705	29,218	32,430	34,156
Adj. R2	0.0157	0.0138	0.0147	0.0148

This table depicts the results from the fixed effects estimation of the following equation:

$$Performance_{i,t} = \alpha + \beta Distraction_{i,t} + \gamma' Controls_{i,t-1} + \pi_i + \tau_t + \varepsilon_{it}$$

Panel A uses as dependent variable (performance measure) market returns, Panel B uses Tobin' s Q and Panel C uses return on equity. For Column (1) the measure of CEO distraction is **Distrac- tion 15/85 Neutral**, for Column (2) the measure is **Distraction 10/90 Neutral**, for Column (3) is **Distraction 5/95 Neutral** and for Column (4) is **Distraction 1/99 Neutral**. Neutral shocks are defined as the bottom or top 15% of the return distribution of a given firm. All regressions include firm FE and year FE and Controls from Table II. Coefficients are reported with t-statistics in parentheses. Robust standard errors are clustered at the firm level. All variables are defined in Table I. ***, **, and * represent significance levels at the 1%, 5%, and 10% levels, respectively.